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## The Double Intradermal Tuberculin Test in Cattle.*

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The whole of the preliminary experimental work in connection with this test was carried out on behalf of the Tuberculin Committee of the Medical Research Council, and has been published in the form of a report by that body. But inasmuch as the test has passed the experimental stage, and is likely to become extensively used in the near future, and the report, in which some details of the technique are incorporated, is not readily available to many members of the profession, it is deemed expedient to give a brief outline of the experimental procedure which was adopted, and to describe the technique which is being employed.

As a result of a casual experiment carried out some years ago in the case of a cow which was known to be tuberculous, but which failed to react to the subcutaneous test, but reacted to the test about to be described, it was suggested that the Tuberculin Committee should carry out a number of tests by this method which should be carefully controlled by the immediate post-mortem examination of the reacting and non-reacting animals by Veterinary Surgeons possessing special skill in such work, and that certain lymphatic glands from all animals should be employed for a biological test in guinea pigs. The method was laborious and occupied much time, but the use of the guinea pig test was amply justified by subsequent observations, for it was found that in some cases where the animal had reacted to the test no obvious lesion was detectable on post-mortem examination, but the guinea pigs subsequently developed tuberculosis.

The investigation was carried out at the Metropolitan Cattle Market during the latter part of last year. The cattle which arrived at the market early on a Saturday morning, received the first or sensitising dose of tuberculin during the forenoon of the same day, and the second or diagnostic dose on the following Monday. The final readings were taken on the next day, and the animals were immediately slaughtered and examined. The following lymphatic glands were inspected with special care:—

| | | |
|---|---|---|
| Pharyngeal. | Prepectoral. | Mesenteric. |
| Submaxillary. | Mediastinal. | Internal and |
| Bronchial. | Hepatic. | External Iliac. |

After inspection the glands were excised and transferred in sterile containers to the Institute of Animal Pathology at Cambridge.

Numerous smears were prepared and examined for the presence of acid-fast bacilli. The surfaces cut during the post-mortem examination were removed, and the glands were then dipped into boiling water for a few seconds, pulped, and treated with 20 per cent. antiformin for half an hour at room temperature, and centrifuged. The supranatant fluid was removed and replaced by sterile normal saline, the whole being then well mixed and 4-5 c.c. injected into each of two guinea-pigs which were killed from 2-2½ months later and carefully examined for lesions of tuberculosis. The following is a summary of the test:—

| | Number. | Reactors. | Non-reactors. |
|---|---|---|---|
| Steers | 61 | 14 | 47 |
| Bulls | 10 | 3 | 7 |
| Cows | 33 | 15 | 18 |
| Heifers | 5 | 2 | 3 |
| *Calves | 5 | 5 | 0 |
| | 114 | 39 | 75 |

The Ophthalmic Test was carried out concurrently with the Intradermal Test.

Two animals which reacted to the intradermal test, failed to react to the ophthalmic test, but gave a positive guinea pig inoculation, while one animal reacted to the ophthalmic test and not to the intradermal test, but gave a negative guinea pig inoculation.

Of the 39 animals which reacted to the intradermal test, 37 or 94 per cent. gave a positive guinea pig inoculation. Of the 75 animals which failed to give a reaction to the test, 74 or 98.7 per cent. gave a negative guinea pig inoculation.

The anomalous results which were obtained in these instances require some comment.

(1) *Cow No.* 39. A negative result was obtained both in the case of the intradermal and ophthalmic tests. Further, on post-mortem examination no macroscopic lesions were discernable, and microscopic examination of smears prepared from the glands failed to reveal any acid-fast organisms; yet the two guinea pigs which were killed 69 days after the inoculation showed very slight evidence of tuberculosis. In one, the only lesion was a tuberculous area in the spleen, while in the second there was a small encapsuled local lesion at the point of injection and the corresponding precrural gland was

* Presented to the Annual Meeting of the Scottish Branch of the N.V.M.A., at Perth, on Saturday, 13th June, 1925.

*The calves did not form part of the investigation at the Metropolitan Cattle Market, but were obtained by the Institute of Animal Pathology.

enlarged and caseating; the spleen contained one tubercle. A possible explanation of this anomaly may be that Cow 39 had only recently become infected, and that sufficient time had not elapsed for her to become sensitive to tuberculin.

(2) *Steer No.* 79. This animal reacted to both tests and on post-mortem examination the bronchial, mediastinal and hepatic lymphatic glands were found to contain calcified areas. Neither of the guinea pigs, which were killed seventy-six days after inoculation, showed any evidence of tuberculosis. The only explanation of this result would appear to be that the animal had recovered from the infection, or that the living organisms, if present, were so few as to have escaped being injected into the guinea pigs.

(3) *Cow No.* 112. This animal also reacted to both tests. On post-mortem examination a few hæmorrhagic areas were found in the cortex of the left bronchial lymphatic gland, a smear from which showed numerous acid-fast bacilli. The guinea pigs which were killed 99 days after injection showed no evidence of tuberculosis. The explanation of this anomalous result put forward by the Committee is that the living bacilli were killed by the antiformin used in the technique or that the infection was due to an avian strain.

Animals of all ages were included in the tests and the results so far obtained are remarkably consistent. Calves which were extensively infected reacted well to the test as did those which were suffering from an acute form of the disease. Further, aged cows, whether very heavily or slightly infected, reacted definitely.

More recent tests on calves under four months (not included in the report) which were presumably infected from the tuberculous udders of their mothers, have shown that the test can be relied upon for the detection of tuberculosis in quite young animals. Such early tests should prove to be of value, especially in the building up of " tubercle free " herds.

A point worthy of notice is that in several instances animals which reacted to the test showed no macroscopic lesions on post-mortem examination, but both guinea pigs developed tuberculosis, while in some instances acid-fast organisms were found in smears from the lymphatic glands.

Careful observation has shown that not infrequently the degree of reaction bears some relationship to the extent of infection. It has repeatedly happened that in old cows, which on post-mortem examination were found to be very heavily infected with tuberculosis, even the first or sensitising dose of tuberculin has produced a massive reaction and a very marked malaise. Similar reactions have been observed in calves which were suffering from an acute tuberculosis with extensive lesions.

The test has been recently applied to several herds which were believed to be free from tuberculosis, and in which the animals had passed the subcutaneous test only a few weeks previously. A number of these animals reacted to the intradermal test, and in some instances to the sensitising dose alone and to such a degree that, although a post-mortem examination has not been possible, there can be little doubt that they are tuberculous.

DOUBLE INTRADERMAL TEST ON THIRTY-TWO COWS, WHICH HAD PASSED THE SUB-CUTANEOUS TEST A FEW WEEKS PREVIOUSLY.

| Number | Initial Reading | 48th hour. | 72nd hour. | Result |
|---|---|---|---|---|
| 1 | 9 | 18 PI | DHT 27 +PI | + |
| 2 | 7 | 16 | DHT 22 +P | + |
| 3 | 6 | 10 | 12 | – |
| 4 | 8 | 10 | 12 | – |
| 5 | 8 | DHT 20 +PI | No Second Injection. | + |
| 6 | 6 | HT 13 +PI | DHT 16 +PI | + |
| 7 | 7 | DHT 17 +PI | | + |
| 8 | 10 | 14 | DHT 20 +PI | + |
| 9 | 9 | DHT 19 +I | — No Second | + |
| 10 | 8 | DHT 46 +IP | — Injection. | + |
| 11 | 8 | 14 | 20 | – |
| 12 | 7 | 14 | 18 | – |
| 13 | 8 | HT 16 +PI | DHT 20 +P | + |
| 14 | 8 | 14 | 19 | – |
| 15 | 10 | 10 | 15 | – |
| 16 | 8 | 14 | 18 | – |
| 17 | 10 | DHT 20 +PI | DHT 27 +P | + |
| 18 | 8 | HT 16 +PI | DHT 20 +PI | + |
| 19 | 8 | 10 | 11 | – |
| 20 | 7 | 12 | 16 | – |
| 21 | 7 | HT 12 +P | DHT 38 +P | + |
| 22 | 6 | 11 | 11 | – |
| 23 | 8 | DHT 28 +PI | No Second Injection. | + |
| 24 | 9 | 11 | 18 | – |
| 25 | 8 | 10 | 14 | – |
| 26 | 8 | 14 | 14 | – |
| 27 | 8 | 16 | DHT 26 +P | + |
| 28 | 8 | DHT 12 | 17 | – |
| 29 | 8 | DHT 17 +PI | DHT 25 PI | + |
| 30 | 7 | 11 | 16 | – |
| 31 | 8 | HT 17 | HT 21 | + |
| 32 | 8 | HT 16 | HT 26 | + |

DOUBLE INTRADERMAL TEST ON FIFTEEN COWS, WHICH HAD PASSED THE SUB-CUTANEOUS TEST A FEW WEEKS PREVIOUSLY.

| Number | Initial Reading | 48th hour. | 72nd hour. | Result |
|---|---|---|---|---|
| 1 | 7 | 10 | 12 | – |
| 2 | 6 | HT 12 | HTD 24 +P | + |
| 3 | 7 | 8 | 11 | – |
| 4 | 8 | 10 | 12 | – |
| 5 | 8 | 10 | 13 | – |
| 6 | 9 | 11 | 14 | – |
| 7 | 6 | 10 | 10 | – |
| 8 | 8 | 10 | 14 | – |
| 9 | 8 | 16 | HT 22 | + |
| 10 | 10 | 14 | DHT 20 +P | + |
| 11 | 7 | 10 | 12 | – |
| 12 | 8 | 12 | 14 | – |
| 13 | 8 | HT 12 +I | DHT 20 +IP | + |
| 14 | 7 | 11 | 12 | – |
| 15 | 10 | 12 | 12 | – |

DOUBLE INTRADERMAL TEST ON THIRTY-ONE COWS, WHICH HAD PASSED THE SUB-CUTANEOUS TEST A FEW WEEKS PREVIOUSLY.

| Number | Initial Reading | 48th hour. | 72nd hour. | Result |
|---|---|---|---|---|
| 1 | 10 | 13 | 14 | — |
| 2 | 8 | 10 | 10 | — |
| 3 | 7 | 8 | 11 | — |
| 4 | 11 | 11 | 12 | — |
| 5 | 10 | 10 | 11 | — |
| 6 | 10 | 10 | 12 | — |
| 7 | 8 | 10 | 12 | — |
| 8 | 6 | 9 | 11 | — |
| 9 | 10 | DHT 18 +P | DHT 20 +LI | + |
| 10 | 8 | 8 | 8 | — |
| 11 | 8 | 8 | 11 | — |
| 12 | 9 | HT 14 +I | HT 18 +IP | + |
| 13 | 10 | 10 | 12 | — |
| 14 | 7 | 10 | 12 | — |
| 15 | 11 | 11 | 14 | — |
| 16 | 9 | 10 | 10 | — |
| 17 | 8 | 14 IP | DHT 23 +P | + |
| 18 | 9 | 10 | 12 | — |
| 19 | 7 | 8 | 9 | — |
| 20 | 6 | HT 12 +P | HT 12 +IP | + |
| 21 | 8 | 10 | 12 | — |
| 22 | 9 | 10 | 10 | — |
| 23 | 9 | 9 | 11 | — |
| 24 | 6 | 6 | 9 | — |
| 25 | 8 | 10 | 12 | — |
| 26 | 8 | 10 | 14 | — |
| 27 | 6 | 8 | 9 | — |
| 28 | 8 | 10 | 11 | — |
| 29 | 8 | 11 | 11 | — |
| 30 | 8 | 9 | 13 | — |
| 31 | 8 | 10 | 12 | — |

### THE TEST.

The ordinary intradermal test in which the injection of tuberculin is made into the sub-caudal fold is well known, and its value as a method of diagnosis well recognised, yet it has never become really popular. The method of applying it has many disadvantages which are well known to most of us.

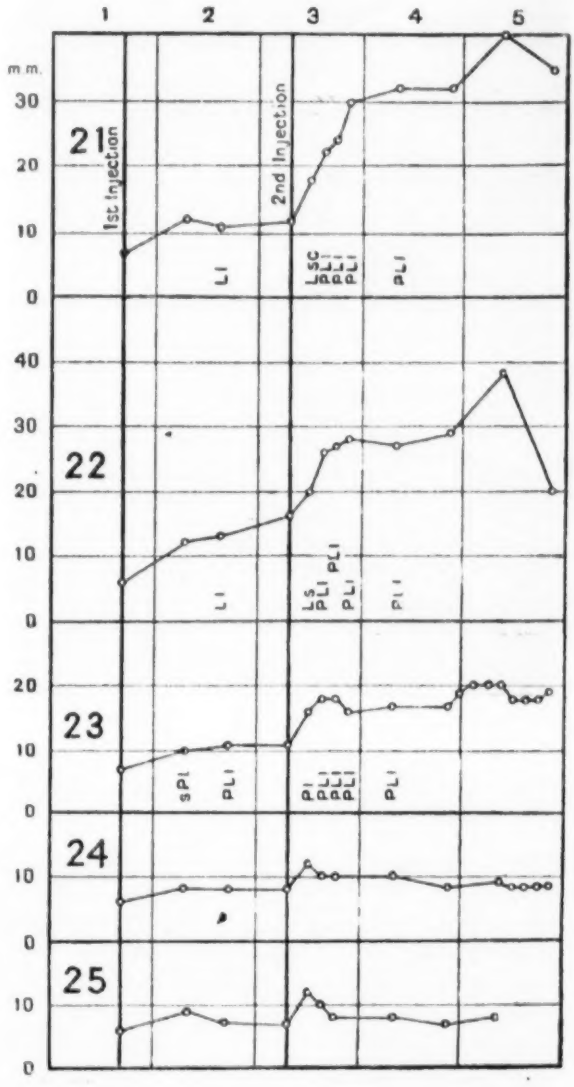
The neck has also been used as the site for the single injection intradermal test notably by Christiansen and Stub, who in 1910 worked out the method and based their diagnosis upon subsequent measurements. In numerous instances, however, a single injection of tuberculin has been found to produce no reaction, or one of so slight a nature as to render a definite diagnosis impossible, whereas a second injection closely following the first and in the *same spot* has produced a definitely positive reaction, which was later confirmed by post-mortem examination. Our experience has taught us that in practice a double injection is essential if reliable results are to be obtained (see chart), and it will be admitted upon the experimental evidence that a very high degree of accuracy can be obtained.

The test is carried out in two stages:—

1. A preliminary or sensitising injection.
2. The test dose.

The tuberculin employed is "old" or ("concentrated" or "undiluted") tuberculin of known potency and not the dilute tuberculin employed for the sub-cutaneous test.

CHART ILLUSTRATING THE IMPORTANCE OF THE SECOND INJECTION.




### TECHNIQUE.

An area of from 2—6 square inches is shaved on about the centre of the side of the neck, with a safety razor which should be reasonably sharp, otherwise, if the surface of the skin is abraded an unsightly scab develops. When many cows are being tested it is convenient to use the left side of one and the right of the other. A fold of skin is taken between the forefinger and thumb of the left hand (Fig. 1) and a short, strong steel dental needle is inserted obliquely into the fold so that the point is in about the centre or a little deeper than the centre of the derma. A syringe of 1.0 c.c. capacity, charged with tuberculin, is then attached to the needle, and 0.1 c.c. of the tuberculin is injected. (Fig. 2.) Considerable pressure is usually necessary, and if the injection is made easily it should be suspected that the needle has penetrated to the subcutaneous tissue.

Figure I.
Method of Inserting Needle.

Figure II.
After the Injection.

When the injection has been made the tuberculin is felt as a small pea-like enlargement when the fingers are passed lightly over the site. Failure to detect such an enlargement suggests that the tuberculin has been injected below the skin, and a second injection should be given in a fresh site. It is always advisable to ascertain that the syringe and needle are working efficiently. This may readily be done by charging the syringe with liquid, thrusting the needle into a piece of rubber and then forcibly compressing the piston. No fluid should escape either past the plunger or at the junction of the needle with the syringe.

The second or test dose is given 48 hours after the first or sensitising dose, and also consists of 0.1 c.c. of tuberculin. It should be injected into *exactly the same spot* as the first or sensitising dose, that is into about the centre of the swelling produced by that dose.

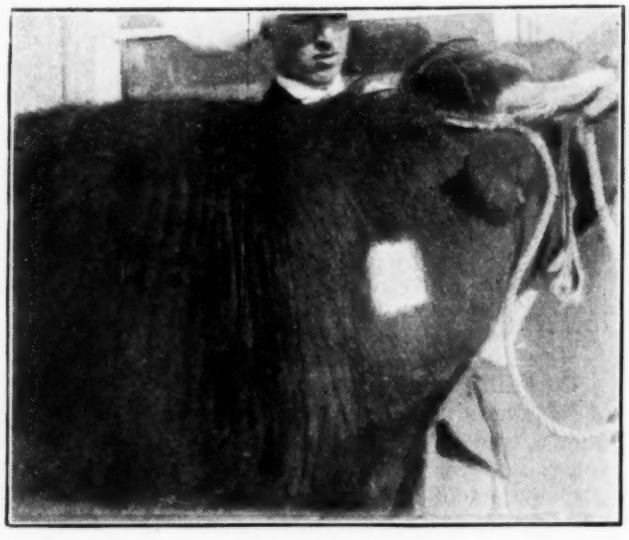


Figure III.
Non-reactor.

Figure IV.
A marked Reaction.

Figure V.

A very marked Reaction.

OBSERVATIONS AND MEASUREMENTS.

After shaving the area, and before the first injection, a fold of skin is grasped between the forefinger and thumb of the left hand, and the thickness of the fold is measured by means of calipers. This measurement varies from 4—8 m.m. in cows, from 4—6 m.m. in calves, and from 11—14 or more in bulls.

After taking the preliminary measurement the sensitising dose is injected.

Forty-eight hours later the fold is again measured at the site of injection. In non-tuberculous animals there is usually but little increase in the thickness. (Occasionally no change is observed, but usually there is some increase in thickness). In tuberculous animals the increase varies within very considerable limits. Sometimes the reaction is so definite that a further dose is uncalled for.

The second injection is now given.

Twenty-four hours after this second or test dose has been injected the area is again examined and measured. Non-tuberculous animals usually show little or no increase in thickness of the area (rarely exceeding double the original measurement). The actual site of injection remains as a sharply circumscribed *pea* or *bean-like area devoid of œdema, heat* or *tenderness.* In tuberculous animals the measurements are always *considerably increased,* and show a varying degree of surrounding œdema accompanied by heat and tenderness.

This examination is the most important of all, as at this time a definite conclusion can usually be reached. The necessity for the second injection is now apparent for it is almost invariably found that an indefinite reaction to the first dose is now definitely positive.

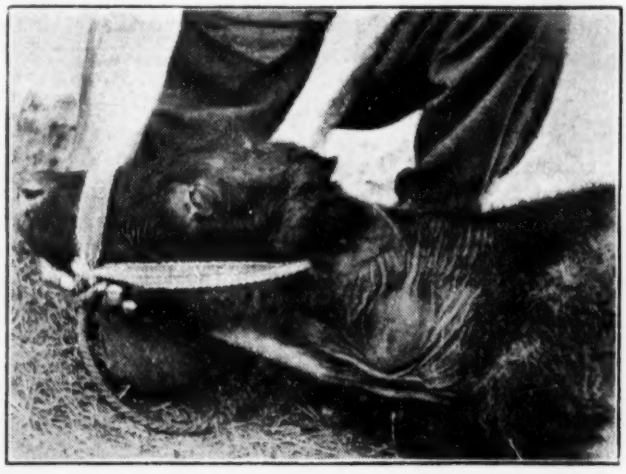


Figure VI.

Reaction in Calf suffering from Acute Tuberculosis.

Figure VII.

Typical Reaction.

If there should be any doubt concerning the nature of the reaction, as there may be until experience has been gained in the readings, a further examination may be made 24 hours later, when the difference between reactors and non-reactors is very definite.

When it is necessary to prepare charts of the reactions it is, of course, essential to take measurements and to plot the resulting curves. It cannot be too clearly pointed out, however, that palpation of the area is of far greater diagnostic value than are the measurements, and for ordinary purposes measurements may be dispensed with.

While the difference in the measurements of a faintly positive reaction and a non-reactor *may* be trifling, the character of the swelling is of the utmost importance, and palpation of the site of the injection at the same time as the measurements are taken is of the greatest importance. In non-tuberculous animals even if the increase in the thickness of the fold is double the original measurement, as occasionally happens, the area remains sharply circumscribed, hard, cool, and non-sensitive.

In tuberculous animals, the site, whatever the measurement may be, is ill defined, soft or "fluffy" to the touch, hot and very tender.

### The Ophthalmic Test.

Throughout the original experiments and in all our more recent work it has been our practice to carry out a *double* ophthalmic test concurrently with the double intradermal test. It requires very little more time and serves as useful confirmatory evidence, especially until such time as the observer has become familiar with the readings of the intradermal test. As has already been stated, it is not quite so reliable as the intradermal test, but is of definite value as a parallel test.

The ordinary technique is employed and a few drops of the *same* tuberculin as is used for the intradermal test are instilled in one of the eyes at the same time as the intradermal injection is made. Little or no reaction may be observed to the first or sensitising dose 48 hours after the first instillation, but 24 hours after the second there is generally a definite reaction in tuberculous animals.

### Summary of Technique.

1. (a) Preliminary measurement of shaved fold of skin.
   (b) Injection into the derma of 0.1 c.c. concentrated tuberculin.
   (c) Instillation of several drops of the same tuberculin into one eye.

   Forty-eight hours later :—
2. (a) Measurement of site of injection, palpation and observation of the area, examination of the eyes.
   (b) Injection of second dose of 0.1 c.c. in the same spot as the first.
   (c) Second instillation of several drops of tuberculin in the same eye as before.

   Twenty-four hours later :—
3. (a) Final measurements and observations of neck.
   (b) Final observation of eyes.

   Twenty-four hours later :—
4. Further observations if deemed necessary.

Abbreviations employed in recording reactors.

| | | | |
|---|---|---|---|
| *Intradermal Test* | H | = | Heat. |
| | T | = | Tenderness. |
| | D | = | Diffuse. |
| | SH | = | Slight heat. |
| | ST | = | Slight tenderness. |
| | SD | = | Slightly diffuse. |
| *Ophthalmic Test.* | I | = | Injection. |
| | L | = | Lachrymation. |
| | P | = | Pus. |

| | | |
|---|---|---|
| v | = | very. |
| m | = | marked. |
| s | = | slight. |

*Control Test.* A concentrated glycerine broth is prepared by the Institute of Animal Pathology and serves as a useful control to the tuberculin. It is of considerable value in that it almost invariably removes any doubt which may exist in the interpretation of the result until the observer has had sufficient experience.

### Advantages of the Test.

1. The greatest advantage of the double intradermal test is, of course, its great reliability. It may be justly claimed that no other test or combination of tests has shown such consistently accurate results in practice.
2. The irksome taking of temperatures by a busy practitioner is obviated.
3. The visits of inspection can usually be fitted in with the practitioner's customary round of visits, *since it is not necessary for the visits to comform exactly to the time table set out above.* A few hours one way or the other make no difference.
4. With practice the injections can be made as rapidly as subcutaneous injections, and the preliminary shaving can be done by the cowman previous to the first visit.
5. The animals need not be kept in during the test, but can lead their ordinary life. The injections and observations can be carried out during the time that a herd of cows is in for milking.
6. In the case of young animals efficient restraint is easily effected if they are driven singly through a "crush" erected between two fields or yards.

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**Appointment.**—Mr. W. J. Ironside, M.R.C.V.S., who has been assistant to Mr. William Brown, B.Sc., M.R.C.V.S., of the North of Scotland College of Agriculture for the past two years, has received the appointment of lecturer in veterinary science in the Midland College of Agriculture and Dairy School at Sutton Bonington, Notts. Mr. Ironside takes up duties on October 1st next. He is a native of Maud. Before the war he qualified as a chemist, and after service with the R.F.A. in France from 1915, entered the Royal Dick Veterinary College, Edinburgh, in 1919, and qualified in 1923.

## A Potency Test for Tuberculin.*

By J. B. Buxton, M.A., F.R.C.V.S., D.V.H.,
Institute of Animal Pathology, Cambridge.

There has always been a demand for tuberculin of guaranteed potency, and during recent years the necessity for all tuberculin used in the diagnosis of tuberculosis in cattle being of proved value has repeatedly been urged. Several methods have been employed for the standardisation of diagnostic tuberculin. Koch considered a tuberculin to be sufficiently potent if 0.5 c.c. injected subcutaneously into guinea-pigs four weeks after infection with the tubercle bacillus killed the animals within thirty hours and produced a zone of intense reaction at the periphery of the tuberculous foci. Von Behring established a unit of toxicity which was the minimum quantity capable of killing artificially infected guinea-pigs within twenty-four hours.

These methods of standardisation were of questionable value, since they were at best toxicity tests, and a uniform degree of sensitiveness in the guinea-pigs was difficult to obtain.

A method of standardisation, based upon a quantitative von Pirquet and intra-dermal reaction in guinea-pigs was elaborated by Eagleton and Baxter.[1] More recently Dreyer and Vollum[2] have published a precipitin method for the standardisation of "old" tuberculin.

It will be admitted that these are a distinct improvement upon the older methods, but the technique is more involved. It will also be agreed that from a veterinary standpoint, a tuberculin which is known to be capable of producing a reaction in tuberculous cattle is urgently necessary. The test about to be described does not claim to be a delicate method of standardisation, but it is a method of determining the relative potency of tuberculins.

*Technique.*—The requisite number of areas for the different dilutions of the several tuberculins to be tested are shaved upon one or both sides of the neck of a bovine animal known to be suffering from natural tuberculosis. The necessary dilutions of each tuberculin are prepared, and the desired amount is injected into each shaved area. The quantities employed in these tests are 0.1 c.c., 0.03 c.c., 0.01 c.c., 0.005 c.c. of concentrated tuberculin made up to the same volume with concentrated glycerine broth. Similar quantities of a tuberculin of known value are injected at the same time and the degree of reaction produced by the different quantities of this "standard" tuberculin, is compared with that of similar quantities of unknown value.

* Presented to the Annual Meeting of the Scottish Branch of the N.V.M.A., at Perth, on Saturday, June 13th, 1925.

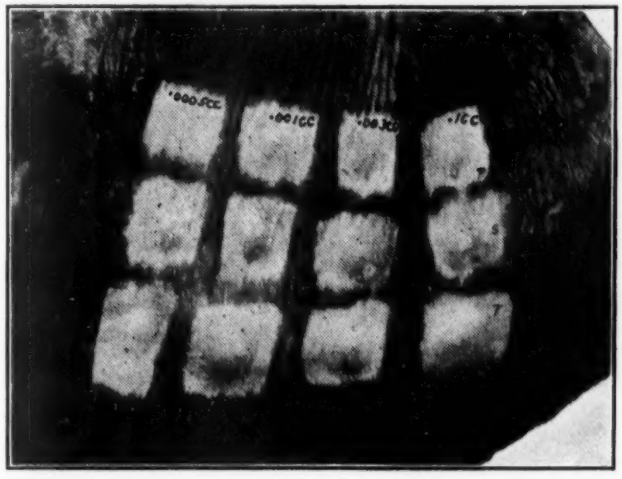

Figure I.
Potency Test with three Tuberculins.
S = Standard.
T = Tuberculin to be tested (better than Standard).
P = Tuberculin to be tested (poor).

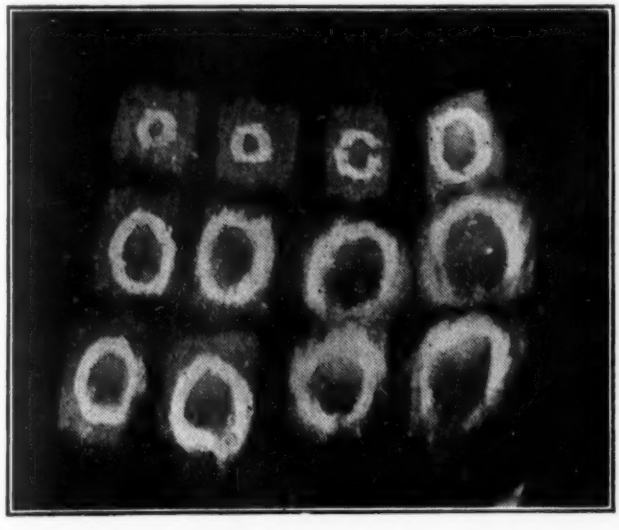

Figure Ia.
Same test as Figure I.
Swellings ringed to show actual size.

Since different animals exhibit a varying degree of sensitiveness to tuberculin it is always necessary to employ a "standard" tuberculin and to compare the degree of reaction produced by the several injections of each of the tuberculins which are being tested for their potency with the corresponding quantity of the "standard." Eight different tuberculins, and probably more, may be tested at the same time, and the animal can be used for a similar test after a few weeks rest, usually by the time that fresh batches of tuberculin are ready for testing.

The injections are made in exactly the same manner as that employed in the double intradermal tests. In some animals the degree of reaction to the first injection is sufficiently marked to render a second injection unnecessary.

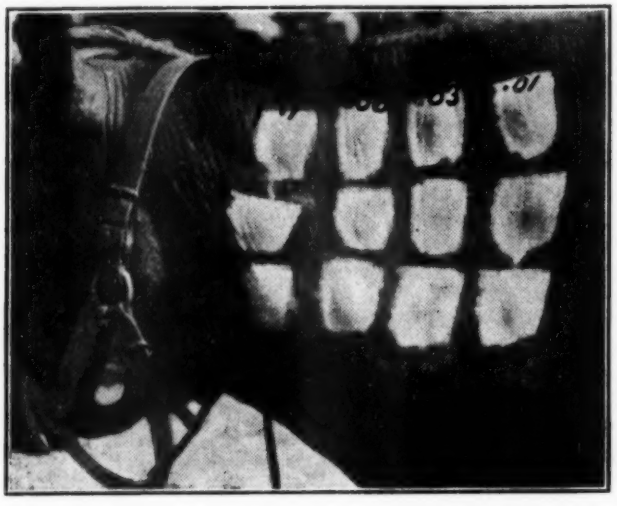

Figure II.

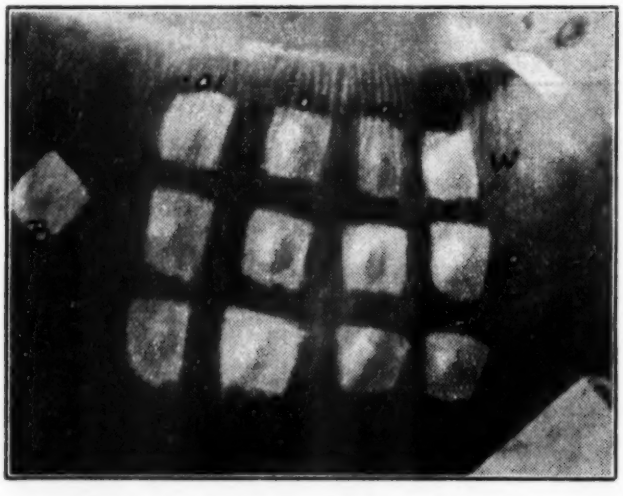

Figure III.

Figures II. and III. illustrate a test comparing five tuberculins (1.2.G.W.C.) of unknown strength with a "standard" (S) and a broth control (B). In this case the quantities employed were 0.1, 0.06, 0.03, 0.01 of each tuberculin, the object being to determine the relative differences between close dilutions.

As a result of numerous experiments a potency titre has been arrived at provisionally at these laboratories. A tuberculin is regarded as being of sufficient potency when $\frac{1}{100}$ c.c. (*i.e.*, one tenth of the intradermal test dose) is capable of producing a perfectly definite reaction when compared with a similar quantity of "standard" in the same animal.

This method of determining the potency of veterinary tuberculin is inexpensive, and is free from the technical difficulties usually associated with methods of standardisation. It has the further advantage of being carried out in *bovine* animals which are suffering from a *natural* infection of tuberculosis. It also overcomes the difficulty of the subcutaneous method of deter-

*(Continued at foot of next column)*

## The Milk Supply and its Improvement.

By William G. Savage, B.Sc., M.D.Lond.,
County Medical Officer of Health, Somerset.
(Reprinted from *The Lancet*.)

### Remedies to Improve the Milk Supply.

The final report, issued in 1919, of the Committee on the Production and Distribution of Milk, emphasised what all authorities on the subject are agreed upon, that the present milk supply is highly unsatisfactory. Since that date the only Act passed affecting milk has been the Milk and Dairies (Amendment) Act, 1922, which in most essentials leaves the problem alone. In addition to questions of chemical purity, which cannot be dealt with from limits of space, there are three different bacteriological problems—*i.e.*, freedom from tubercle bacilli, general bacterial cleanliness, and removal of the liability to spread acute infectious disease. With so many problems it will be obvious that there can be no simple short cut to a satisfactory supply, but that it is a problem which must be surveyed from many angles.

### *More Effective Legal Control.*

The need for additional legal powers has been demonstrated in a previous article. There is, however, another Act upon the Statute-book, the Milk and Dairies (Consolidation) Act, 1915. This is a unique measure, since (with some modifications) it is a repetition of and substitution for the Milk and Dairies Act, 1914, which, although passed, never came into force, and, like it, the 1915 Act has been postponed and has never come into operation. The 1922 Act further extended its date of coming into force to September 1st, 1925. This Act has been kept in cold storage for ten years, and there is nothing to prevent a further Act from still further extending the period of hibernation.

From the point of view of the milk-reformer this Act cannot be accepted as likely to solve all the

*(Continued from previous column.)*

mining potency, since :—(1) Several tuberculins can be tested simultaneously, and thus a true comparison can be made with the "Standard," whereas in the subcutaneous method one tuberculin only can be used at a time, and an accurate comparison with a "Standard" tuberculin cannot be effected. (2) As is well known, cattle which receive repeated subcutaneous injections of tuberculin are liable to become less sensitive to subsequent doses.

I gratefully acknowledge the valuable help and co-operation, both in the initial work carried out on behalf of the Medical Research Council and in subsequent tests, of Messrs. R. E. Glover, B.Sc., M.R.C.V.S., R. L. Cornell, B.Sc., M.R.C.V.S., and W. J. Leyshon, M.R.C.V.S., of the staff of this Institute.

[1] Brit., J., Exper. Path. 1923. 4, 289.
[2] *Lancet*, Nov. 15, 1924. 1003-7.

existing milk deficiencies. On the other hand, it contains a number of valuable and important sections. The mother Bill was in the end an "agreed" measure. An "agreed" Bill in the sphere of public health usually means that to get it passed many of the best clauses have either to be withdrawn or accepted handicapped with "safeguards" which make them unworkable or so slow in operation that they fail to do much good. It is cumbersome in working, since it gives both the smaller local authorities and county councils powers which are in part concurrent. Its chief value is in Section I., which gives the Ministry of Health power to make Orders which, if fully made use of, would go a long way legally to ensure clean milk. These powers are coupled with the "safeguard" that they have to be made with the concurrence of the Board of Agriculture and Fisheries. These powers are, therefore, very much in the nature of a dark horse of possibilities but hardly a certainty, perhaps not a starter. The need for a new Milk and Dairies Order to control method in milk production has been amply demonstrated in my last article, and under Section I. of the 1915 Act an effective Order is possible. The Draft Milk and Dairies Order, 1915, proposed to be made under the Act, was very valuable, and it is to be hoped that any Order issued will be along the lines of this Order, with additions dealing with methods of clean milk production.

While education is more important than legislation in connexion with an improved milk-supply, more definite legal requirements as regards milk production and handling are in themselves of great educative influence when tactfully carried out. No experienced milk-reformer wants drastic enactments, and the essentials are very simple things. Too zealous workers have done much harm, and led agricultural interests to take fright at what are to them, and indeed in reality, impossible requirements. If, however, it is right to require cows' udders to be clean and milkers to have clean hands and to milk in cleanly fashion, and for churns to be sent locked, why not say so legally and have done with it? There is no dispute as to the essentials.

In my opinion, it is for the medical profession to press for better control, either by the passing of a suitable Milk Act or, failing that, by no further postponement of the operation of the 1915 Act. It is impracticable to discuss all the sections of this Act, but as regards tuberculosis they demand a little more consideration.

*The Prevention of Human Tuberculosis from Milk.*

Everyone who has made a study of the problem of the eradication of bovine tuberculosis is aware of its extreme complexity and difficulty, in part due to its magnitude, in part to the large financial interests involved, in part to the fact that it concerns two Government departments looking at the problem from different angles. Fortunately, it is equally obvious that it is a solvable problem, while it is agreed that progress can be achieved along several lines. It is an agricultural even more than a public health question, and while the two are not identical they are interdependent. It is impracticable to discuss these lines of progress and remedies in detail here, and, indeed, they would involve a very large number of purely technical considerations. Fortunately, there are many valuable papers available on the subject.

Just as with human tuberculosis, it is obvious that drastic measures are impracticable and would defeat their object, and that progress can only result by advancing along definite and approved lines. The two most approved lines have been (*a*) the thorough separation of healthy from tuberculous animals and the rearing of a healthy non-infected herd; (*b*) the elimination of cases of "open" tuberculosis in bovines as the cases which most spread the disease and mainly infect the milk-supply.

Experience has shown that much can be effected along these lines. Judging from past legislation, the most probable lines of administrative action will be a re-enactment of the 1914 Tuberculosis Order, together with the tuberculosis clauses of the 1915 Act. These clauses in the 1915 Act, if they become effective, will give a good deal of power, but they seem complicated in working and, while they may prevent some infection from tuberculous milk, will do little to reduce the amount of bovine tuberculosis. Their greatest hope in this direction is in the power they give for the appointment of whole-time veterinary inspectors and for bacteriological examinations. The Tuberculosis Order of 1914 is an Order of the Board of Agriculture which was suspended at the onset of the war and has not been re-enacted. In the words of the covering circular, the Order "aims at securing the destruction of every cow found to be suffering from tuberculosis of the udder, or to be giving tuberculous milk, as well as of bovine animals which are suffering from tuberculosis with emaciation." In other words, it follows line (*b*) mentioned above. To detect these animals reliance was placed upon notification by their owners to the local authority (the authority under the Diseases of Animals Act, 1894) and also on notification from veterinary surgeons in the course of their practices. Compensation was paid for these animals when slaughtered on an approved scale, so the cost was heavy.

Since many writers—veterinary and others—are pressing for the re-enactment of this Order, presumably along the original lines, it is of some importance to consider whether it is useful from the public health point of view. In theory the Order should be a potent weapon to reduce tubercle bacilli in milk, and reduce the amount of bovine tuberculosis. As operated, however, my experience and inquiries were that it was doing but little along these directions. My primary objection is that it was not being used as a preventive measure, although this may be true in some cases, but as an agricultural measure to pay compensation for these special tuberculous animals. Unless worked on preventive lines in the great majority

of instances the cases of udder tuberculosis and "wasters" will not be detected and slaughtered until *after* they have been actively excreting tubercle bacilli for long periods. No compensation should be payable for any animal if the conditions could reasonably have been detected at an earlier stage. Two postulates are, I think, essential. First, that it must not be run by the County Agricultural Committee as a purely agricultural measure without any co-operation with the public health authorities (this was the way it was worked in Somerset), but must be looked at and worked as a preventive measure. Secondly, the veterinary inspectors who visit, examine, and report must be *whole-time* officers of the authority working along preventive lines and either under, or closely co-operating with, the Public Health Committee. Unless these two postulates are fulfilled the compensation under the Order is, in my opinion, largely wasted, as it will neither reduce the amount of bovine tuberculosis nor diminish the infectivity of the milk-supply.

While the precise lines of advance are a matter for the experts to decide, it is for medical opinion to enunciate that the present position is a reproach to public health and an economic disaster to the country.

*Universal Controlled Pasteurisation.*

It was pointed out in Article I. that the term pasteurisation covers different processes and that ordinary uncontrolled pasteurisation cannot be relied upon to do anything beyond prolong the life of a bacterially contaminated milk. On the other hand, a definite case can be made out for adopting a system of scientifically controlled pasteurisation as the best means of securing a safe milk-supply. When the arguments in favour are dissected they amount to three: (*a*) The difficulties in the way of preventing the contamination of milk with pathogenic organisms are very great, and even the best safeguards are but partial. Complete safety can only be attained by submitting the milk at a stage before distribution to treatment by heat adequate to ensure the death of any pathogenic bacilli possibly present; (*b*) Properly carried out such treatment does nothing to damage the nutritive or vital properties of the milk; (*c*) Pasteurisation is much cheaper than a system of efficient dairy inspection. While the last is agreed upon by all, upon the first two points there is by no means unanimity.

Objections to such a scheme of universal pasteurisation of milk are three-fold. In the first place, many scientific observers do not acquiesce in the view that efficient pasteurisation does not damage the milk. In the second place, its success depends upon efficient working, and in work-a-day practice it may fail lamentably. The apparatus and connecting pipes may not be kept clean and may add bacteria; the machinery may break down or be improperly used. If relied upon as the sole safeguard it may fail us, and I have studied several outbreaks of food poisoning due to milk, in which the outbreak was directly associated with the use of milk which was supposed to have been pasteurised, but which for trade reasons had not been so treated. The danger of inefficient pasteurisation is a real one if other than clean milk is allowed to be pasteurised, since the operator knows that highly contaminated milk may be damaged by heat, and his bias is to under-pasteurise. In the third place, we have to realise that as adopted in this country it is a substitute for cleanliness. Its advocates deny this and talk about it as a temporary measure which will in no way retard progress to obtain a cleaner milk. This is an attitude with which I find it impossible to concur. There is no need to pasteurise clean milk to enable it to be delivered to long-distance customers, a fact which has been repeatedly demonstrated. It did not become adopted in England as a public health measure but as a trade process to enable bacterially contaminated milk to be conveyed unsoured to the consumer, and its further extension will continue the process. It costs money to pasteurise, and the wholesale distributors are not going to pay this and also pay more to get clean milk. It is true that milk on the verge of going sour cannot be pasteurised, but milk containing a million or so of bacteria per c.cm. is being pasteurised every day.

To my mind, the advocates of pasteurisation spoil their case by overstating it. A really strong case can be made out for universal pasteurisation on the lines that the difficulties and expense of obtaining a pure safe milk are too great, and that it is cheaper and equally satisfactory to obtain it fresh and therefore not excessively contaminated, and pasteurise it under strictly defined and rigidly controlled conditions—such milk to be labelled as pasteurised, re-heating forbidden, and all other than scientifically controlled pasteurisation methods prohibited. All milk sold as fresh milk not to have been subjected to any treatment. The balance of scientific evidence is favourable to the view that it is possible to select time and temperature conditions that will not damage the milk on the one hand, and yet will destroy with reasonable reliability non-sporing pathogenic bacilli. Such a contention is a confession of failure, in that it says in effect that we cannot apply to milk what we apply to other foods, but it is a perfectly logical one, and it is arguable that it is the best solution of a difficult problem. Unfortunately, pasteurisation is never presented in this form, but always with promises of benefits which it is unable to perform and without safeguards which it is necessary to provide.

In some parts of the U.S.A. it is worked in connexion with adequate measures for controlling the purity of the supply at the source, bottling under controlled conditions and supervision throughout. That, again, is logical, but is not the way it is advocated in England. We are very far indeed in this country from any system of adequate supervision over production together with controlled pasteurisation, and anything less is unsafe and inexpedient.

**The Veterinary Record.**

*18th July, 1925.*

## TWO VETERINARIANS IN TRANSPORT HISTORY.

The recent Railway Centenary Celebrations have drawn the attention of the public to the great developments which have taken place during the last hundred years in our many and various forms of locomotion. The hundred years have seen changes which our forefathers would have believed to be quite impossible for the modern conditions of transport, and the consequent traffic, both by sea, road, rail and air, have developed so rapidly that a complete revolution has occurred, altering the whole system of commerce and having its effect both directly and indirectly on every phase of the life of the people. It is interesting to remark and to record the part played by veterinary surgeons in the means of transport which is so vital to the industry of the nation.

In the earliest days of the railway, the road coaches were still the recognised means of travel and we know how great a part the old-time veterinarians played in attending to the very considerable number of stage coach and post horses which were then on the road. The coming of the "iron horse," seemed to be about to take the place of the animal which provided their means of livelihood, and curiously enough, the birth of the railway was synchronous with the birth of our professional aspirations.

The earliest conception of a railway was simply of an iron highway, where an engine would do the work previously done by the horse, the railroad being the property supplied by a Company, the coaches and other vehicles that of the users, just as was the case with road coaches. As the arrival of the road coach was awaited at the various stages, so the first trains were awaited and preparations made to receive them, each train taking its proper turn in sequence at junctions. There was no telegraph to announce the arrival and so watch was kept for each train by a policeman, who by hand signal showed the driver that all was ready for the reception of the train. These policemen wore tall hats and swallowtail coats and were of very dignified bearing. If the policeman was not seen, or happened to be elsewhere, it was accepted that the line was clear. As traffic increased it was soon realised that a policeman could not be in two places at once and the necessity for giving a danger signal might (and did) arise in his absence. As a result, the first danger signal was evolved. This took the form generally of a revolving board with a lamp which the policeman could leave at "danger" during his absence, but many and various devices were used and there was no uniformity. Thus an engine driver always presumed his line to be clear unless he was informed to the contrary—the exact opposite of modern practice. Signals were at first only placed at stations, but at a later date they were placed at all junctions, cuttings and tunnels and more policemen had to be employed to watch them. There still being no telegraph, a time interval was allowed and after its expiration after the passing of a train the signal was placed at "all clear" in the belief and hope that all would be well. The traditional first night signal was a candle in the stationmaster's window on the Stockton and Darlington Railway and was used to inform the driver that he was to stop. At this period there was a system of signalling in the Navy by means of a semaphore arm and this was used on land stations. It took a veterinary surgeon, however, to apply this simple system to the railway and it was a veterinary surgeon who invented the railway semaphore, with which we are now all so familiar. J. W. Gowing was a veterinarian living at Camden Town. He had a large and lucrative practice and deserved it, for he was full of enthusiasm for his profession and was highly esteemed by everyone in his neighbourhood. His invention was developed by quite a chance occurrence. A policeman at Watford in 1846 was two lazy to run from one signal to another to move the semaphore; he therefore devised a means of balancing the arm with a weight and attaching a wire to it. The wire he led to his hut to save himself the trouble of moving, thus setting the pattern of railway signalling devices which has stood the test of time and which is in operation to this day. Gowing also invented the solid disc wheel for rail coaches, which with modern modification is in use to-day. He must have been a true genius, and we are glad to place his inventions on record, since we have seen no mention of him in any commentary on the railway centenary.

So much for the railway. We cannot, while writing on the subject of traffic and transport, omit reference to Dunlop, of Belfast. The present generation is living in a period not sufficiently remote to estimate the value of Dunlop's invention of the pneumatic tyre. Without this the motor car could not have developed; without this speed would have remained only possible on railways, and even so, no such speed could have been attained as may now be reached by motors fitted with a veterinary surgeon's invention. Does the world realise that it was

*(Continued at foot of first column next page.)*

## Foot-and-Mouth Disease.

CONGRATULATIONS FROM THE FARMERS' UNION.

The following is Branch Circular No. 147, which has been circulated to all inspectors and to the indoor staff of the Diseases of Animals' Branch of the Ministry of Agriculture.

T. A. 6446.

*Branch Circular No.* 147.

TO ALL INSPECTORS AND TO INDOOR STAFF OF DISEASES OF ANIMALS' BRANCH.

The following minutes and correspondence referred to therein are circulated for the information of the Staff of Diseases of Animals' Branch.

*By the Secretary.*

I send you the annexed correspondence arising out of the very gratifying resolution passed by the Council of the National Farmers' Union as to the work of you and your Staff in connection with Foot-and-Mouth Disease.

(Intld.) F.L.C.F.

22 : 6 : 25.

*Chief Veterinary Officer.*

In circulating the attached minutes and correspondence I would like to take the opportunity of expressing my indebtedness to the indoor and outdoor staff for their magnificent efforts which have brought about the result upon which these gratifying comments have been made.

(Intld.) S S.

29 : 6 : 25.

Copies of the letters from and to the National Farmers' Union are appended.

J. JACKSON,
Deputy Chief Veterinary Officer.

Diseases of Animals' Branch.
10th July, 1925.

*Copies.*

Ministry of Agriculture and Fisheries,
10 Whitehall Place, S.W.1.
22nd June, 1925.

Dear Captain Fyfe,—I am much obliged for your letter of the 19th instant in which you sent me a copy of the Resolution unanimously adopted by your Council, congratulating the Staff of our Animals' Division on the freedom of the country from Foot-and-Mouth disease, and expressing the thanks of the Union for the work they have done.

I shall have great pleasure in conveying this Resolution to Sir Stewart Stockman and his staff, and I know that they and all of us here will appreciate very warmly the terms of the Resolution.

It is a great satisfaction to the Ministry that, in spite of the severe restrictions and loss incurred by the farming community by recent serious outbreaks of Foot-and-Mouth Disease, we have been able to rely with confidence on the support of the representative organisation of farmers in this country in carrying out the policy which we have thought necessary to adopt. It is particularly pleasant to notice that the Resolution you sent me was proposed by a representative of Cheshire in view of the exceptionally serious trial which the farmers of that county had to undergo.

May I add that all of us here recognise and appreciate as you do the unfailing zeal displayed by all members of the staff of the Animals' Division and the immense amount of hard work thrown upon them under conditions of exceptional difficulty and strain. We are very proud of our colleagues, and we hope and believe that now that the organisation has been strengthened and increased they may be able to cope without difficulty with any sporadic outbreaks that may occur.

Yours sincerely,
(Signed) F. L. C. FLOUD.

Captain Cleveland Fyfe.

National Farmers' Union,
45 Bedford Square, W.C.1.,
19th June, 1925.

Sir Francis Floud, K.C.B., CF/E.
Ministry of Agriculture and Fisheries,
Whitehall Place, S.W.1.

Dear Sir Francis,—I have pleasure in communicating to you the following resolution which was unanimously adopted yesterday by the Council of the Union on the proposition of Mr. Hobson, of Cheshire, seconded by Mr. Eady, of Northamptonshire, and supported by Mr. Simpson, of Nottinghamshire :—

"That the Council of the National Farmers' Union, representing 59 County branches, 975 Local Branches, and a membership of at least 120,000 farmers, wishes to extend congratulations to Sir Stewart Stockman and his assistants in the Animals' Diseases Section of the Ministry of Agriculture on the fact that this country is now free of Foot-and-Mouth Disease. This Council having knowledge that Sir Stewart Stockman and those working with him never spared themselves in the task they undertook of eradicating Foot-and-Mouth Disease, wish to thank him and his staff for the great energy and ability they put into their work, and to express the hope that with a new organisation they will be able to keep in hand the primary outbreaks that may from time to time occur owing to the disease being endemic on the Continent and other countries of the world." Yours faithfully,

(Signed) CLEVELAND FYFE,
Secretary.

(*Continued from previous page.*)

Dunlop, the veterinary surgeon, who made land speed possible ? We doubt it, for the world is so busy that these facts have become of interest only to historians. It is well to be reminded, however, of men of our profession who have made their mark in history apart from their own especial branch of study, and it is of interest to note that the inventions of the two men we have named would seem to be inimical to the personal interests of the members of their calling. Yet such is not the case, for there never was a more propitious outlook for the profession than there is in this, the centenary year of the railway.

## Army Veterinary Service.

LONDON GAZETTE. WAR OFFICE. REGULAR FORCES.

July 10th—Major M. St. G. Glasse retires on retired pay and is granted the rank of Lt.-Col. (July 11th).

REGULAR ARMY RESERVE OF OFFICERS.

Lt.-Col. M. St. G. Glasse (Major, retired pay) to be Lt.-Col. (July 11th) with seny., April 28th, 1924.

TERRITORIAL ARMY.

Lt. W. M. Webster resigns his commission (April 3rd); F. J. Mullane to be Lt. (July 11th).

# THE CAMBRIDGE CONGRESS.

AMENDED PROGRAMME.

The following is the completed and amended programme of the Association's Congress, to be held at Cambridge from August 17th to 22nd :—

| *Date.* | | | *Week commencing August 17th, 1925.* |
|---|---|---|---|
| Monday, | 17th | 2-30 p.m. | Committee Meetings. |
| ,, | ,, | 4-0 p.m. | Winding-up Meeting of N.V.M.A. Ltd., followed by First Statutory Meeting of N.V.M.A. |
| ,, | ,, | 4-30 p.m. | Council Meeting. |
| Tuesday | 18th | 10-0 a.m. | Inaugural Meeting, Guildhall, commencing with Address of Welcome by the Vice-Chancellor of the University. |
| ,, | ,, | 10-30 a.m. | Annual General Meeting. |
| ,, | ,, | 3-30 p.m. | Garden Party, Sir Frederick Hiam. |
| ,, | ,, | 6-0 p.m. | Popular Address by Sir Daniel Hall, Chief Scientific Adviser to the Ministry of Agriculture, Guildhall. |
| ,, | ,, | 9-0 p.m. | Reception by President, Lion Hotel. |
| Wednesday | 19th | 9-30 a.m. | Paper :—Animal Nutrition. |
| ,, | ,, | 11-30 a.m. | Paper :—Tuberculosis Order. |
| ,, | ,, | 7-30 p.m. | Annual Banquet, Guildhall. |
| Thursday | 20th | 9-30 a.m. | Paper :—Plant Poisoning. |
| ,, | ,, | 11-30 a.m. | Paper :—Recent Legislation on Food Inspection. |
| ,, | ,, | 2-0 p.m. | Demonstrations. |
| ,, | ,, | 7-30 p.m. | Complimentary Dinner to retiring President, Lion Hotel. |
| Friday | 21st | 9-30 a.m. | Paper :—Dystokia. |
| ,, | ,, | 11-30 a.m. | Paper :—Intestinal Strongyles. |
| ,, | ,, | 2-30 p.m. | Visit to Chivers. Factory and Farms, |
| ,, | ,, | 5-30 p.m. | Closing Meeting. |
| ,, | ,, | 6-0 p.m. | Council Meeting. |
| ,, | ,, | 8-0 p.m. | Whist Drive or Dance. |
| Saturday | 22nd | 10-0 a.m. | Visit to places of interest in Cambridge. |

SUBJECTS FOR PAPERS.

| | | |
|---|---|---|
| No. 1. | Re-introduction of 1914 Tuberculosis Order ... ... | J. W. Brittlebank.<br>J. S. Lloyd (Opener). |
| ,, 2. | Recent Legislation on Food Inspection (not milk) in England and Scotland ... ... ... ... | J. McAllan.<br>T. Dunlop Young (Opener). |
| ,, 3. | Plant Poisoning ... ... ... ... ... ... | D. Kehoe.<br>W. H. Andrews (Opener). |
| ,, 4. | Animal Nutrition ... ... ... ... ... ... | Prof. T. B. Wood.<br>F. Taylor (Opener). |
| ,, 5. | Dystokia ... ... ... ... ... ... ... | F. T. Harvey.<br>E. P. Edwards (Opener). |
| ,, 6. | Intestinal Strongylosis, Special reference to Prevention and Treatment ... ... ... ... ... ... | T. W. M. Cameron.<br>A. W. Noel Pillers (Opener). |

| | | |
|---|---|---|
| *Demonstrations* | Examination of Milk for Tuberculosis, etc., School of Agriculture. | |
| | Intradermal Tuberculosis Tests. | |
| | Jaundice in Dogs. | |
| | Exhibition of Slides, etc., etc. | |
| | Meat Inspection, by Col. D. Young. | |
| *Tickets* ... | Garden Party ... ... ... ... ... | No charge. |
| | Annual Banquet ... ... ... ... ... | £1 1s. 0d. |
| | Complimentary Dinner ... ... ... ... | 10s. 6d. |
| | Whist Drive or Dance ... ... ... ... | 7s. 6d. |
| | Congress Ticket (instead of Badge) ... ... | No charge. |

In addition to the above, there will be a Golf Competition (for a prize to be presented by the President), 18 holes medal play, under handicap, at the Gog Magog Golf Club, Cambridge, on a day to be decided later. A Ladies' Tennis Tournament—handicap singles or doubles, according to which is most popular with those wishing to enter—will also be held. Hard courts have been secured for the week to enable the rounds to be played off without interruption. Semi-finals will be played off by Thursday, 12 noon, and the Final Round at 11-30 on Friday morning. Intending entrants are requested to forward their names to the Local Secretary, Col. W. A. Wood, 21 Leys Road, Cambridge, without delay.

## Royal Veterinary College Research Institute.

OPENING BY THE DUKE OF CONNAUGHT.

A distinguished company assembled on the occasion of the opening of the Research Institute in Animal Pathology by Field-Marshal H.R.H. The Duke of Connaught, K.G., at the Royal Veterinary College, Camden Town, of which the Duke is President, which took place on Tuesday last.

Amongst those present were :—

The Right Hon. the Earl of Northbrook, Chairman of the Board of Governors ; The Right Hon. the Earl Bathurst ; Sir Thomas Elliott, Bart ; E. M. Crookshank, Esq. ; Ernest Mathews, Esq. ; The Right Hon. the Earl of Yarborough ; The Right Hon. Viscount Elveden ; Lt.-Col. Sir Merrik R. Burrell, Bart. ; Sir Gilbert Greenall, Bart ; Sir Stewart Stockman ; Lt.-Col. E. W. Stanyforth ; Sir John M'Fadyean, Principal of the College and Director of the Institute ; Dr. A. L. Sheather, Assistant Director ; and Lord Mildmay of Flete.

The foregoing are Governors of the College.

The Right Jon. Lord Bledisloe ; Sir H. D. Rolleston, Bart., President, Royal College of Physicians ; Colonel Sir George Loyd Courthope, Bart. ; Major-Gen. Sir John Moore ; Sir F. L. C. Floud ; Sir A. D. Hall ; Sir Charles Sherrington, President, Royal Society ; Sir David Prain, Treasurer, Royal Society ; Sir Herbert Matthews, Secretary, Central Chamber of Agriculture ; Sir Frederick Smith ; Sir Malcolm D. Murray ; SirD'ArcyPower ; Sir W. J. R. Simpson ; Sir Thomas W. Parkinson ; The Right Hon. Edward F. L. Wood, Minister of Agriculture ; Major H. P. G. Maule, Architect for the Research Institute ; F. M. May, Esq. and D. Hannen, Esq., of the firm of Messrs. Holland & Hannen & Cubitts Ltd., Contractors for the Research Institute ; His Worship the Mayor of St. Pancras, Councillor F. B. Gurney ; Alderman F. L. Combes ; Alderman J. Johnson ; Alderman T. A. Collins ; Alderman J. H. Mitchell ; Alderman H. Rolles ; J. W. W. Hopkins, Esq., M.P. ; J. Clarkson, Esq., President, Royal College of Veterinary Surgeons ; Professor William Bulloch ; Major-General W. D. Smith, Director General A.V.S. ; Colonel A. G. Todd ; Professor E. A. Gardner, Vice-Chancellor, University of London ; Professor A. E. Boycott, University College Hospital Medical School ; Dr. J. A. Arkwright, Lister Institute ; Captain S. R. Douglas, F.R.S. ; Dr. R. T. Leiper ; Dr. C. M. Wenyon ; Professor J. B. Farmer, F.R.S. ; Andrew Balfour, Esq., C.B., Director, London School of Hygiene and Tropical Medicine ; M. J. R. Dunstan, Esq., Principal, Cirencester Agricultural College ; Professor W. D. Halliburton ; Captain H. F. C. Crookshank, M.P. ; H. E. Dale, Esq. ; Captain Alfred Adrian Jones and Professor T. W. Cave, Wye Agricultural College, together with a large number of Fellows and Members of the Royal College of Veterinary Surgeons.

His Royal Highness having inspected the Institute, the Earl of Northbrook, Chairman of the Board of Governors of the College, addressed the company then assembled in one of the spacious apartments of the Institute. The Earl said : It is only a little over twelve months ago since you, Sir, (addressing the Duke) did the College the great honour of laying the foundation stone of this building, and the fact that it is to-day ready for occupation is, I think evidence that the work has been carried out with great expedition. (Hear, hear). The Governors are satisfied that the building has been well designed, for the purposes for which it is intended, by the architect, Major H. P. G. Maule, and we are also satisfied that the structural work has been efficiently carried out by the contractors, Messrs. Holland and Hannen and Cubitts. Although, the Institute is not yet complete in the matter of equipment, the Governors decided that, in the interests of the work which it is intended to do, it ought to be opened without delay. The establishment of such an Institute in connection with the Royal Veterinary College is a source of pride and satisfaction to the Governors, and they are grateful to the Ministry of Agriculture and to the Commissioners of the Development Fund for having provided the whole cost of the erection of the building. (Cheers.) It is the earnest desire and confident hope of the Governors that the opening of this Institute will prove to be a great landmark in the history of the college and in the advancement of knowledge regarding the prevention and cure of the diseases of animals. In recent times, official estimates have been made of the losses which contagious diseases occasion agriculturists and stock-owners throughout this country and, although such estimates cannot make any pretence to accuracy, yet they are in agreement in showing that the total sum is sufficient very gravely to affect that branch of agriculture which is known as animal husbandry. With regard to contagious diseases, this country is, perhaps, in a better position than any other with an equal animal population, for a number of serious animal plagues still prevalent in many parts of the world no longer exist here. The primary purpose of this Institute is to extend that knowledge, which resulted in our emancipation, to those diseases that still remain with us and thereby to acquire the power to prevent or to cure them. With regard to laboratory accommodation and equipment, the Governors believe that this Institute will leave little to be desired. The library and museum are features of the Institute, which will be of slower growth, but it is hoped that 'ere long they will be so developed as to be very widely valued and appreciated.

The Governors would like to take this opportunity of recording their appreciation of the generosity of Lord Glanely and of Mr. Roberts, each of whom gave a donation of £1,000 towards the cost of the equipment, and we are also grateful to our colleagure Mr. E. M. Crookshank, a Vice-President, who has presented his magnificent library of over 1,000 volumes, some being the first books published in connection with human and veterinary pathology, and also over 400 pamphlets, reports and journals. (Hear, hear.)

I now, Sir, would ask you to do us the honour to declare the Institute open. (Cheers).

H.R.H. the Duke of Connaught, K.G., who was received with loud cheers, said : I am so very pleased to have the honour of opening this Institute, of which

I had the pleasure of laying the foundation stone last year, and I congratulate all concerned on the rapidity with which the construction of the building has been carried out. (Hear, hear). From what I have already seen of it, I have no doubt that, in respect of laboratory accommodation and the provision of the necessary apparatus for pathological research, it is well adapted for the work that has to be carried on in it, and I also have no doubt that, if adequately staffed, the Institute in years to come will more than justify the expense of providing for and maintaining it.

I am glad to learn that, in designing the Institute, provision has been made, not only for the accommodation of the staff devoting the whole of their time to research, but also for those who from time to time may desire to investigate special problems in animal pathology not included in the regular programme of the Institute. Although the main purpose of the Institute is to provide facilities for the actual promotion of research by highly trained experts, I venture to express the opinion that it will have an important influence in two other directions; first, in serving as a training ground for those who desire to fit themselves for research in animal pathology at home or in British Dominions abroad, and, secondly, by the effect which it will have on the entire veterinary profession through its association with the Royal Veterinary College. The Commissioners of the Development Fund, in providing the money for the erection of the Institute, considered it essential in the interests of stock-owners that better facilities for research should exist at this College, at which so large a percentage of our veterinary practitioners received their professional training. They consider it of great importance, not only that disease should be investigated, but that the profession immediately concerned in the treatment of sick animals should be recruited by men educated in an atmosphere of research. The first condition of progress in dealing with human and animal diseases is better knowledge regarding their cause, but in order that such knowledge may be fruitfully applied there must be a body of men adequately trained for the purpose. It is in this respect that the Institute and the Royal Veterinary College will work hand in hand. (Cheers).

Lord Northbrook has referred to the great losses which animal diseases inflict upon agriculture, but these losses in the end, fall on the whole community. The public will share in any benefit that may result from the foundation of this Institute, which I now declare open. (Loud cheers).

The Right Hon. Edward F. L. Wood, M.P., Minister of Agriculture and Fisheries, in response to the invitation to speak, made by the Earl of Northbrook from the chair, said: I am very happy, as the Minister of Agriculture, to have the opportunity of expressing the pleasure that it gives me, on behalf of the Ministry, to have been able to take part in this ceremony to-day, and to associate myself, if I may, Sir, with the words that you have spoken in declaring this Institute open. I can assure the Governors and all those who are interested in that side of research work with which we are concerned this afternoon that any assistance which it may from time to time lie in the power of the Ministry of Agriculture to give will be most willingly and readily given. (Cheers).

I suppose it is not less true to-day than it has been in the past that live-stock is the sheet anchor of a great deal of British farming and if that is so it becomes, of course, of increasing importance that we should follow His Royal Highness' advice and constantly train our minds —and by our minds, I mean the minds of the whole agricultural community in this connection—to appreciate the imperative importance of pursuing the task of discovering the germs and consequently removing the causes of those animal diseases which still exist amongst our live-stock. I suppose that one of the greatest distinctions between exploration as applied to geography and exploration as applied to the field of research is that geographical exploration tends to limit what remains to be discovered, while every discovery in the field of research tends to the expansion of what has yet to be discovered. The well-educated research worker would pursue his path with the full knowledge that every step he takes down the avenues of discovery will reveal to him more and more clues of possible knowledge, and if somebody would supply the funds (laughter), he would be only too willing and anxious to work. I hope as the years go on we shall more and more be able to find human material to pursue those steps and I think it was you, Sir, who last year reminded those who were then here that in the end the most important part of the whole equipment of such an Institute as this was, and would remain, the human material that was to work inside these beautifully equipped rooms. That is most obviously true. We have been able to translate into cash during the last few years the toll which has been taken by one disease—foot-and-mouth disease; something like three millions from the point of view of the state and not less from the point of view of the agricultural industry, apart from the general charge on the tax-payer. At the moment, thanks to the efforts of the veterinary staff—in which connection I think I may here give a well-earned word of praise to Sir Stewart Stockman—(Cheers) and the farmers generally, that disease is now quiescent, but I am advised that as long as it remains as plentiful as it is upon the Continent, we should not be deceived into building any false hopes upon a position which may be only a position of the moment.

I only wish to conclude, if I may, by congratulating the Governors and all those concerned upon the efforts that have led to the result that has brought us here to-day. I am quite certain that the work that will be done in this Institute as the years go on will be not unworthy of the work that has been done for more than 100 years within the walls of the Royal Veterinary College. (Cheers).

Mr. E. M. Crookshank, Vice-President of the College, in thanking His Royal Highness for attending and performing the ceremony, said: Will you allow me, Sir, to say, on behalf of the Governors of the College, how cordially we welcome the Minister of

Agriculture here to-day. (Cheers.) We have all listened with gladness to his most interesting and sympathetic speech, and his encouragement and promises of assistance will be of the greatest value to the Governors who, for many years past, have realised the necessity, with the limited funds at their disposal of providing for the investigation of the diseases of animals which cause such terrible losses to farmers and, in the recent case alluded to by the Minister, enormous losses to the whole community.

We have done our best, but I do ask to be allowed to say this, that it is largely—very largely—due to the interest taken in the researches carried on at this College by our friend Sir John M'Fadyean (Cheers)—to his untiring efforts and loyal co-operation—that that Governors have been able to carry out their policy and provide the necessary buildings for research.

The work of this Institute will not be restricted to benefitting merely the farmers and stock-owners of this country. It is designed ultimately to be intimately connected with the investigation of animal diseases of the tropical regions of our Empire. I have visited these tropical regions, especially Africa, at intervals during the past 30 years, and it is amazing to see what has already been accomplished in the prevention of disease by the application of bacteriology and pathology, and yet the work that remains to be done is appalling. In Africa, and especially in the district which has been visited by Your Royal Highness, that awful pest, the Tsetse fly as to-day spread. It attacks stock, introducing Nagana with disastrous results, and it attacks human beings, causing the loss of tens of thousands of lives. It is of importance and interest to us to-day because more and more veterinary surgeons and veterinary research officers are urgently needed, and will be needed in greater numbers, to co-operate with the officials and the administrators in those countries in dealing with this terrible scourge, and not only in dealing with this scourge, but in taking steps to stamp out such devastating plagues as Texas Fever and East Coast Fever.

We must, therefore, do our part to help to supply these officers, and this greatly increases the responsibility of the Governors. Veterinary surgeons to-day acquire a knowledge of such subjects as bacteriology, entomology, parasitology, bio-chemistry, physiology and pathology, and the policy of the Governors is, if funds are forthcoming, to make that department of this College comparable in its buildings and equipment to this magnificent Institute. Students and research scholars will be attracted in increasing numbers from all parts of our Empire and it is imperative that we should give such higher education to our students that many will be able to pass on from the College to this Research Institute and devote their lives to original research in certain departments.

The Governors owe a very deep debt of gratitude to His Royal Highness, our President, for his unfailing interest in the welfare of the College, and His Royal Highness has added greatly to our indebtedness to-day, in the midst of his numerous engagements, by so courteously consenting to open the new Institute, and may I add, on behalf of those veterinary surgeons who received their professional education at the Royal Veterinary College, who are to be found in all parts of the British Dominions, in private practice, the Army, and the Civil Service, who are spending their lives in endeavouring to cure or to prevent the diseases of the domesticated animals, that wherever they may be they will read of the proceedings here to-day and will learn with pride and satisfaction that His Royal Highness has once more shown the great interest which he has always taken in the Royal Veterinary College and the advancement of veterinary science.

On behalf of the Governors of this College, I beg to present you our loyal thanks. (Cheers.)

H.R.H. The Duke of Connaught in reply, said: I have listened with the greatest interest to the very admirable speeches which have been given here to-day. I can only repeat that it has been a real pleasure to come here to-day and to take this very small part in promoting what I am sure is the opening of a very important advance in veterinary knowledge. This College has long been proud of the work it has been doing; at the same time, it felt that it had to move with the times and that to make it perfect—so far as things in this human world of ours can be made perfect—it had to work hand in hand with the research for which these buildings have been constructed.

I venture to think that great success will attend the establishment of this Institute as a centre of research. There is no finality in science, but at the same time the efficacy of the colossal efforts of the Royal Veterinary College, and all veterinary surgeons throughout the Empire, will be largely increased by this combination of the Royal Veterinary College and the research work being carried out in these admirably designed laboratories. I wish every success to our new move and I am certain that it will attend it. (Loud cheers.)

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In the House of Commons recently Mr. Charles Edwards asked the Minister of Health whether he had seen the report of the medical men who were members of the House who had been investigating the Spahlinger treatment and its effects; and whether, seeing that it was so favourable to that treatment he would take steps to ensure that it be made available for sufferers in this country.

In reply Mr. Neville Chamberlain stated that he had not yet seen this report, but he understood that the conclusion reached was that a *prima facie* case had been made out for the Spahlinger treatment, and that the report recommended that an exhaustive trial of the remedy should be made. As regards the second part of the question, he might point out that he had repeatedly stated that he was anxious to arrange for a scientific investigation of this method of treatment in this country as soon as the materials were made available. He had been waiting for three years for these materials, but was still without information as to when they were likely to be forthcoming, and he understood that the report referred to contained no assurance that the treatment was or could soon be available in this country. Some weeks ago, however, he arranged for two of the medical officers of his Department to pay a further visit to Geneva for the purpose of conferring with M. Spahlinger on this and other questions.

## Royal College of Veterinary Surgeons.

EXAMINATIONS, JULY, 1925.

LIST OF SUCCESSFUL CANDIDATES.

LONDON.

| *Class A.* | *Class B.* |
|---|---|
| †Bhattacharjee, J. | Barron, N. S. |
| *Bovett, L. W. | *Claxton, B. A. |
| Bragg, A. L. | *Cooper, W. J. |
| Catmur, B. G. | De Garis, J. A. |
| Coulden, L. W. | Edwards, S. J. |
| Evans, J. T. R. | *Gabriel, L. |
| Formston, C. | Holman, H. H. |
| *Hole, N. H. | Langley, E. |
| James, A. J. | *Messervy, E. |
| *MacIntyre, A. B. | Orr, A. B. |
| Over, A. B. | Prime, R. T. C. |
| *Purchase, H. S. | *Roberts, R. |
| Sadler, H. J. | Shoshan, A. |
| Sheriffs, J. T. | Webb, E. A. |
| *Shin, M. B. | White, J. B. |
| Smith, G. P. | *Woodrow, C. E. |
| †Stevenson, J. S. | *Xuto, C. S. |
| Steward, J. S. | |
| Thomas, A. L. | |
| *Wright, A. J. | |

| *Class C.* | *Class D.* |
|---|---|
| Aldis, D. H. | Fenwick, D. C. |
| Chamberlain, T. G. | Hudson, J. R. |
| Coulthard, R. | Jackson, J. C. |
| Davies, D. J. | Jones, V. B. |
| Dixon, A. C. | Land, F. |
| Dowling, R. E. C. | Leader, G. H. |
| Ismail, M. M. | Malkani, P. G. |
| *Jordan, L. | Nanda, P. N. |
| Shaw, J. K. | Shah, S. M. A. |
| Stewart, J. | Wood, A. E. |
| | Dyet, J. |

LIVERPOOL.

| *Class A.* | *Class B.* |
|---|---|
| Curtis, H. | Blakemore, F. |
| Edelston, P. H. A. | Garside, J. S. |
| Marginson, G. C. | Macdonald, J. |
| White, R. S. | *Radford, W. J. |
| | Thomas, G. H. |

| *Class C.* | *Class D.* |
|---|---|
| *Durrant, G. | Mills, D. W. |
| Mullen, A. L. | Morcos, Z. |
| Roberts, Miss Ida Lloyd | Smith, Albert |
| Wood, C. R. | |

† Denotes 1st Class Honours.
* Denotes 2nd Class Honlurs.

His Majesty the King, accompanied by Queen Mary, opened the new house of the British Medical Association, Tavistock Square, London, W.C.1, on Monday, the 13th instant.

Among those present was Mr. Joseph Clarkson, M.R.C.V.S., President of the Royal College of Veterinary Surgeons.

# CLINICAL REPORT.

## Undulating Costal Arches.

By A. W. WHITEHOUSE, M.A., D.V.S.
Principal, Glasgow Veterinary College.

At the end of April, 1925, we killed for dissection a pit pony about 11 years old and a little below 14 hands in height. As it was not expected that anything worth reporting would be found, no records were kept, and the *data* given are from memory.

When the skin and superficial muscles were removed, the costal arch on each side was found to present the peculiarities now reported, and photographs were taken *in situ*, but were not satisfactory. The photographs sent herewith show both sides with an artificial background and after considerable drying had taken place. The sternum is still attached, but the ribs have been cut through a little below their angles and consequently the thorax has a collapsed appearance.

Right Costal Arch of Pony.

The costal cartilages run down on each side in a wavy manner, the larger waves showing a depth of about two inches. Otherwise their relations to each other and their attachments to their respective ribs are normal.

Using the distal ends of the ribs as landmarks, the following chart can be made out:—

| | Rib. | | | Rib. | |
|---|---|---|---|---|---|
| Left. | 18 | Shallow depression. | Very shallow depression. | 18 | Right. |
| | 17 | | | 17 | |
| | 16 | Shallow depression. | Shallow depression. | 16 | |
| | 15 | Shallow depression. | Depression a little deeper. | 15 | |
| | 14 | | | 14 | |

| Rib. | | | Rib. |
|---|---|---|---|
| 13 | Deep depression. | | 13 |
| 12 | | Deep depression. | 12 |
| 11 | | | 11 |
| | | | 10 |
| 10 | Normal from here forward. | | |
| 9 | | Normal from here forward. | 9 |

Left Costal Arch of Pony.

It will be observed that the waves are practically symmetrical.

The parts are entirely healthy, and no doubt this unusual condition was congenital.

An observer would have been puzzled if he had palpated the costal arches during life.

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The High Commissioner for Australia gives notice that the restrictions imposed by the Commonwealth Government on the importation into Australia of cattle, sheep, and swine, and second-hand jute bags from Great Britain, owing to the prevalence of foot-and-mouth disease in this country, were recently lifted. In view of the outbreak of foot-and-mouth disease at Hull on July, 3rd, the High Commissioner telegraped to the Commonwealth Government for further advice. A reply has now been received to the following effect :—

Second-hand jute bags from Great Britain may be shipped immediately.

The question of permitting importation of cattle, sheep, and swine is under consideration. A decision on this point will be communicated to the High Commissioner in the course of a few days.

Pending further advice from Melbourne, no arrangements should be made for the shipment of sheep and swine. Under the standing prohibition against the importation of cattle shipped during the months of June to November inclusive, cattle will not, in any case, be able to be shipped before December.

## BRANCH REPORT.

### Scottish Branch.

ANNUAL MEETING AT PERTH.

The annual meeting of the Scottish Branch of the National Veterinary Medical Association was held at the Station Hotel, Perth, on Saturday, 13th June, under the Presidency of Hugh Begg, Esq., F.R.C.V.S.

The meeting was highly representative of the profession and all the Divisions in Scotland ; and included among those present the following members and guests :—

Messrs. W. Anderson, J. Anderson, R. G. Anderson, Dr. O. C. Bradley, Professor J. Basil Buxton, G. F. Body, J. Brown, J. Bishop, D. Brown, H. Begg, D. Cumming, A. Douglas, R. E. Drennan, J. Donaldson, A. Fulton, W. Gardner, J. Gibson, A. Gofton, R. Greig, G. Howie, T. M. Inglis, J. H. Jones, G. H. Livesey, J. R. McCall, T. McWilliam, J. McDougall, N. H. McAlister, F. McKenzie, J. D. Pottie, W. Pierson, W. S. Petrie, D. B. Hodges, H. W. Robson, D. S. Rabagliati, A. S. Rutherford, A. Spruell, W. R. Smith, A. Sievwright, W. Tweed, J. Taylor, P. Wilson, and A. Walker.

Apologies for inability to attend were received from Messrs. J. Peddie, David E. Orr, A. Baird, A. L. Robertson, E. J. H. Sewell, W. W. Peggie, J. Brown, D. Crabb, G. W. Weir, R. G. Linton, W. M. Mitchell.

The *minutes* of the last meeting were read and confirmed.

ELECTION OF OFFICERS.

On the motion of the PRESIDENT, Mr. H. W. Robson, M.R.C.V.S., Laurencekirk, President of the North of Scotland Division, was unanimously elected President for the ensuing year.

Mr. J. Howard Jones was re-elected Hon. Secretary.

During the morning session, Professor J. Basil Buxton, M.A., F.R.C.V.S., D.V.H., gave a demonstration of the administration of the intradermal tuberculin test in cattle. He then addressed the meeting on (1) " The Double Intradermal Tuberculin Test in Cattle " and (2) " A Potency Test for Tuberculin." (Professor Buxton's papers receive publication elsewhere in this issue.—Ed.).

At the close of his address, Professor Buxton handed round the meeting records of test results, and photographs illustrating the reaction of the duo-intradermal test.

The following gentlemen, Messrs. Begg, Gofton, Inglis, McAlister, Anderson, Howie, Rabagliati, J. Brown, McCall, Livesey, McDougall, Pottie and D. Brown, took part in the discussion and voiced the welcome and hearty thanks of the Branch to Professor Buxton, and its appreciation of his readiness and willingness to travel the long distance to oblige them with his excellent demonstration and address.

In reply to the questions, Professor Buxton stated that (*a*) as the result of experiments carried out he was able to state that previous inoculation with tuberculin at various periods prior to this test being ad-

ministered, did not make any alteration of the reaction to the duo-intradermal test in an affected animal, (*b*) that he was prepared to supply, to members of the veterinary profession, concentrated tuberculin of a guaranteed potency and the price of which would be 1s. for a quantity sufficient to administer the duo-intradermal test to the bovine.

At the conclusion of discussion, a most hearty vote of thanks, on the call of the chairman, was extended to Professor Buxton.

Mr. J. HOWARD JONES, O.B.E., M.R.C.V.S., Veterinary department, Edinburgh, demonstrated specimens of tuberculous lesions affecting bovine tracheæ. He stated that since 1st May this year, to date, he had examined the tracheæ of 84 tuberculous bovines, made up of the following: 4 bulls, 19 bullocks, 60 cows, 1 heifer. Of these, he found that 3 bulls, 3 bullocks and 33 cows were showing tuberculous lesions in the tracheæ. The lesions for the greater part were to be found in the tracheal fold, and with the one exception in those examined, the tracheal lesions occurred in bovines which were affected with advanced pulmonary tuberculosis. He also mentioned the case of a cow which had recently been added to a tubercle free herd on the strength of a tubercle free record, and which proved to be the only reactor upon re-testing the herd three months after her admission. The cow was slaughtered forthwith, and while showing signs of only recent tuberculous infection upon *post mortem*, had beautifully defined tuberculous lesions in the trachea.

Mr. LIVESEY, General Secretary, N.V.M.A., also addressed the meeting, giving a short résumé of the activities of the National Association, and the great preparations in force for the success of the Congress at Cambridge. He congratulated the Scottish Branch on its virulence and enthusiasm.

A hearty vote of thanks to the President for his conduct in the chair ended a most pleasant and instructive gathering.

J. HOWARD JONES,
*Hon. Secretary.*

ERRATUM.

The heading of the clinical report from Mr. C. R. A. Powell in last week's *Record* should have read: "Urinary Calculus in the Bitch," a printer's error having been responsible for the words "Urinal Calculcus."

DEATH.

At 31 Midvale Road, St. Helier, Jersey, Channel Islands, on June 26th, Mary Cairns, wife of C. E. Gray, M.R.C.V.S., late P.V.S. of Southern Rhodesia, The Transvaal, and The Union of South Africa.

An invention which, says the Chester correspondent of the *Daily Express*, makes sheep's wool grow faster, was described by Professor Barker, of Leeds University, at the international conference of sheep-breeders, held recently at Chester.

He said a Japanese doctor had placed on the market a fluid which, when injected in the veins of a sheep, say, every two days, promotes rapid growth of wool.

"So rapid is the growth said to be," Professor Barker continued, "that two months' injection produces twelve months' growth at the ordinary rate. Thus two or three shearings each year are possible."

## DIVISIONAL REPORT.

### North Midland Division.*

The Quarterly Meeting of the above Association, was held at the King's Head Hotel, Change Alley, Sheffield, on November 4th, the President, G. Green, Esq., M.R.C.V.S., Rotherham, in the chair. The The following members were present:—Messrs. Bowett Collinson, Ducksbury, Fletcher, Hodgman, Robinson, Murgatroyd, Sampson, Thompson and the Hon. Secretary. Apologies for inability to be present were received from Major Abson and Messrs. Scott and Evershed.

The Minutes of the last meeting having been published in the *Record*, were taken as read and signed. The Minutes of the Council Meeting held on October 24th, were read by the Hon. Secretary and confirmed. Arising out of these Minutes, it was decided to subscribe £2 2s. to the Victoria Veterinary Benevolent Fund.

Mr. C. H. Ducksbury was elected a member.

Correspondence was read from the Secretary of the Lancashire Division, with regard to Sir Stewart Stockman's address to a combined veterinary meeting to be held in Manchester, on December 5th, and it was agreed that as many members as possible should attend.

Considerable discussion took place on the letters from the Secretary of the N.V.M.A. and the Western Counties V.M.A., regarding veterinary inspection at dog shows, and it was recommended that the principle of fees be agreed to, and to suggest to the National, that the Kennel Club be asked to arrange for the payment of fees to be one of their conditions of holding shows under Kennel Club Rules.

Regarding fees for veterinary attendance in public courts, it was agreed that a minimum fee of one guinea should be charged with mileage 6d. each way, or first class railway fare.

With respect to County veterinary inspection fees, the Hon. Secretary stated that he had received particulars of fees paid in different counties from Messrs. Abson, Hudson and Marrison, in the counties of the West Riding, Nottingham and Derbyshire respectively. Concerning the latter, Mr. Fletcher mentioned that since Mr. Marrison's scale had been sent out, a new scale had been decided upon, raising the fees for ordinary inspection and mileage by 2s. 6d. per inspection. It was stated that the fee for attending farm sales in the West Riding of Yorkshire, was £2 2s. and mileage, but there was no further fee for other sales if held on the same day. The Hon. Secretary was instructed to send copies of the West Riding scale of fees to Messrs. Bowett, Hudson, Ludlow and Little (of Newark), and ask the last-named to give information as to the fees he received for inspection at markets in the county of Nottingham. The meeting decided that the scale of fees allowed in the West Riding was the most satisfactory, and thought that adjoining

* Received January 15th, 1925.

counties should be brought into line if possible, particular pressure being brought to bear upon the County Council of Nottingham, as the fees paid in that county were considerably below the average paid in other counties.

The Hon. Secretary was instructed to draw up, if possible, a programme for next year's meetings, and it was suggested that Messrs. Murgatroyd and F. C. Scott be asked to contribute papers, and that Professor Buxton and Mr. G. H. Livesey be asked to attend.

The election of officers for 1925 was then proceeded with and the PRESIDENT, Mr. G. Green, was unanimously re-elected.

*Vice-Presidents*:—Messrs. F. C. Scott and J. A. Hodgman.

*Auditors*:—Messrs. T. C. Fletcher and J. H. Yates.

*Hon. Treasurer*, Mr. H. Thompson and *Hon. Secretary*, Mr. J. S. Lloyd. The Council was re-elected *en bloc*. The Hon. Treasurer drew attention to the fact that several members were in arrears with their subscriptions and it was decided that Rule 9 relating to this matter, should be enforced after the next meeting; consequently all members whose subscriptions are over two years in arrears, will be struck off the Roll of Membership.

The PRESIDENT then called upon the Hon. Secretary to open a discussion on Veterinary Inspection and Recent Milk and Dairy Legislation. The HON. SECRETARY, in his remarks, traced legislative measures relating to dairies, cowsheds and milkshops, from the year 1878 up to the present time. He stated that the Dairies, Cowsheds and Milkshops Orders, being permissible, were in many districts not put into force. When the Dairies (Consolidation) Act, 1915, became operative, there was no doubt that considerable improvements would be made in this branch of sanitation, because powers would be given to County Councils to carry out enactments where defaulting Local Authorities took no action. Regarding graded milk, he thought 'Certified' and 'Grade A Tuberculin Tested' Milk would only be purchased by the rich, and that the present regulations relating to the matter did not take sufficient interest in the milk supply to the poorer classes. He considered that more stringent inspection should be applied to people who had dirty premises, dirty cows, dirty attendants and consequently were bound to produce dirty milk. He explained that it was quite easy to apply the sedimentation test to a large number of samples of milk daily and to then proceed to visit, instruct and encourage the people to do better and if necessary prosecute those who made no improvemnent. The PRESIDENT, in thanking Mr. Lloyd for his remarks, took part in the discussion, which was carried on by Messrs. Fletcher, Sampson and Hudson. The last named thought that veterinary surgeons should take much more interest in the construction of new cowsheds, to get them as modern as possible, steps being made to ensure that the cowsheds were so made, that the cows, floors and walls could be kept clean.

*(Continued at foot of next column.)*

## Alleged Damage to a Trotter in "Firing."

JUDGMENT FOR THE DEFENDANT.

The following reserved judgment by Mr. H. W. Bundle, S.M., was delivered at the Magistrate's Court on May 21st, in the case in which David Swain (Mr. Eric Russell) proceeded against John Miller (Mr. H. Macalister), claiming £200 as damages alleged to have been caused to a trotting horse treated by defendant.

"Plaintiff claims £200 damages caused to a trotting horse 'Marold' owing to the alleged unskilful treatment by defendant, a qualified veterinary surgeon. I find that defendant was called in by plaintiff to treat the horse, which was lame, and had swelling above the fetlock of the left hind leg. On February 1st, defendant, accompanied by Mr. Danskin and Mr. King, went to plaintiff's farm. Mr. King was not called at the hearing for reasons given by defendant. Plaintiff and Mr. Mortimer, a nephew, were present when the horse was examined, and the advice of defendant to fire was accepted, and he was instructed to proceed. Anæsthetic was administered, the horse being roped and thrown, after an attempt had been made to administer same without throwing. The horse was allowed to get up, to enable the anæsthetic to take effect. When ready to fire, the horse was fractious, and had to be thrown. The fetlock was fired and the horse freed and allowed to rise. On examination of firing defendant decided that the leg was insufficiently fired and decided to fire further, and the horse was again thrown. When defendant was applying the iron to the horse on this occasion it struggled violently. A crack was heard and Danskin, who was assisting, exclaimed that the leg was broken, adding: 'That's awful work,' or a similar phase. The horse got up and walked away and defendant proceeded to carry out an operation on another horse for plaintiff.

"The plaintiff's claim for negligence is based on the ground that the method of roping adopted by defendant was insufficient in that the horse was not under proper restraint, and that by reason of such insufficient roping, the horse was enabled to struggle and, in so doing, fractured his hip or femur.

"Lengthy evidence was given concerning the method of roping adopted. Mr. Danskin roped the horse on each occasion, and defendant's statements as to the method of roping adopted—corroborated by Mr. Danskin—is diametrically opposed to that of the plaintiff and Mr. Mortimer. After hearing this evidence and the manner in which it was given, and considering the probabilities, I have no hesitation in accepting defendant's statement as to the method of roping that was adopted. It was a safe and proper method, and I would find it difficult to believe that any experienced veterinary surgeon, such as Mr. Danskin, would for one moment attempt to rope a horse without a turn round the pastern joint and round the leg. The

*(Continued from previous column.)*

A member showed a specimen of a broken neck of a foal. He said that the foal was found with a swollen neck, but standing. It fell down about twelve hours later, could not rise, and died on the eighth day. To prevent injury while struggling, the foal was raised and kept in slings. *Post-mortem* examination showed discolouration of the neck below the articulation of the atlas and axis, the odontoid process being fractured and withdrawn from the atlas.

A vote of thanks to the President terminated the Meeting.

J. S. LLOYD,
*Hon. Secretary.*

plaintiff and Mr. Mortimer suggest that after the horse was thrown the ends of the rope were merely held. I would not like to be in the vicinity of the legs of a horse so secured, and it is hardly reasonable to believe that the defendant would risk himself in such a position while firing.

"What injury the horse suffered owing to its struggling when the crack was heard I find it somewhat difficult to determine. Those present at the operation assumed that his leg was broken, and this belief was strengthened by Mr. Danskin's remark. The evidence of Mr. Aris, who saw the horse on February 6th, is that the horse had fractured his hip, and his grounds for this conclusion are that on moving the leg he could feel the bone move, and the horse appeared as though he was going to fall. Mr. Williamson examined the horse on March 17th, and states that he seemed to have a fracture. The leg appeared to be a little bit smaller about the joint. He did not think there was any doubt the femur had been fractured. Defendant states that after the operation on the second horse was completed—and this took about an hour—he, the plaintiff and Mr. Danskin examined 'Marold,' but could find no evidence of fracture. It was arranged that the plaintiff should keep the horse for a few days and await developments. It is clear that at this time neither defendant nor Mr. Danskin could say whether a fracture had occurred or not. No experienced veterinary surgeon would allow a horse to linger on if a fracture were indicated beyond doubt. He next saw the horse on February 6th, and could find no evidence of fracture and came to the conclusion that bad fetlock was the trouble. He next saw the horse on the 19th, in company with Mr. Snowball.

"Mr. Snowball, who is a very experienced veterinary surgeon, states that in his examination on this date he was of the opinion that lameness was due to an enlarged fetlock joint, evidently the result of a strain. He could see no evidence of a fracture elsewhere, particularly as regards the hip, in which there was no appearance of displacement, the contours of the hip being correct, and there was no shortness of the limb, which invariably results. There was a slight wasting of the muscles, due to long-standing bad fetlock, preventing proper use. He also scouted the idea of the femur having been fractured. I am of the opinion that during the firing operation the horse did not fracture his hip or femur. Even with the human body, in times of stress, very distinct cracks may be heard, resembling nothing so much as the snapping of a bone. I have heard such a noise myself, and no definite explanation is given of it by medical men.

"The crack may have been caused, as Mr. Snowball suggests, by the straining of ligaments round the hip joint, or I might suggest, the possibility of semi-dislocation of the hip-joint, the ball being partially prised out of the socket joint. Whatever happened, it naturally caused additional pain to the horse, but, looking at the way in which the horse was able to move, even on February 1st, I am satisfied that no fracture was sustained. On Mr. Aris's statement, that on February 23rd he did not have much difficulty in catching the horse to examine him—'He dashed away and I had to chase him into a corner'—it seems peculiar that over three weeks later, when defendant and Mr. Snowball called to examine the horse, it should be lying *inside* the kitchen door. In conjunction with the evidence, I have consulted the authorities quoted by counsel for both plaintiff and defendant.

"I am of the opinion that the plaintiff has entirely failed to substantiate his claim that the horse was negligently roped and by reason of such negligent roping was enabled to struggle, and hurt himself. I think it proper to add that had I found negligence established, I would have had some difficulty in ascertaining the damage. The horse at the time of firing was not a sound horse. It was suffering from deep-seated strain and firing was a problematic cure—one seldom finds a racehorse that has been fired on the hind leg standing up to work.

"Judgment will be for defendant with costs, as per scale and witnesses' expenses to be fixed by the Clerk of the Court."—*The Southland Times.*

# NOTES AND NEWS.

The Editor will be glad to receive items of professional interest in these columns.

## Diary of Events.

July 22nd Meeting of the South Eastern Division at Rhodes Farm, Mill Hill, London.

,, 31st Meeting of the North Wales Division at Bangor.

Aug. 18th Meeting of the Eastern Counties Division at Cambridge.

**Aug. 17th 22nd N.V.M.A. Congress at Cambridge.**

In the House of Commons (in committee) last week, the Minister of Agriculture moved that it was expedient to make provisions out of money to be provided by Parliament towards the conpensation payable by local authorities for the slaughter of cattle, in accordance with orders made under the Diseases of Animals Act, 1894, in case of the existence or suspected existence of tuberculosis, of sums equal to three-fourths of the amount of compensation so paid by them. It was estimated that the total gross compensation would be about £67,500 a year, of which the Exchequer would pay £50,000. A certain percentage of the responsibility for the scourge of tuberculosis rested on the consumption of tuberculous milk, and it was the aim of the resolution to make a start in getting rid of tuberculous milk at the source. Great progress had been made in the last few years. Nearly 200 herds of dairy cattle in England were tuberculosis-free herds, but there was still a great deal more to be done. If they were to tackle the problem with regard to its national importance they must tackle it on national lines; and it was time a forward movement was made in that direction. At present, when tuberculous cows were traced, he was afraid their owners often sold them, and the expenditure of the municipal authorities in combating tuberculosis was largely wasted. We might have to advance gradually towards the ideal of the total eradication of tuberculosis, but he thought members would welcome a start for so important an object.

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Mr. A. V. Alexander (Sheffield, Hillsborough, Lab.) said that if any criticism came from that side it was because some of them felt that the steps taken by the Government did not appear to be quite sufficient. Referring to the necessity of replenishing herds, he said there was a feeling that the Importation of Animals Act, 1923, should be amended so as to include healthy cows and heifers from Canada. He urged that the Government should prevent as far as possible any part of carcases condemned on account of tuberculosis being used afterwards for human consumption.

Sir A. Sinclair (Caithness and Sutherland, L.) said his only objection to the resolution was that it seemed to imply that the Ministry was not taking the offensive

against the scourge of tuberculosis. He suggested that some more active measures, including free tuberculin tests and periodical examinations, might be taken.

The Minister replied that the order would mark a definite step forward in the suppression of tuberculosis, but he would be glad to consider on a wider review of the question the suggestion made by Sir A. Sinclair. He estimated that 1,000 cattle would be dealt with every month under the terms of the order. As to the replenishment of herds, there had been an annual increase of 100,000 a year in the number of heifers and cows in the country. That increase was largely due to the replacement after the effects of the war. Earlier this Session an Act was passed permitting the importation of pedigree animals from the Dominions. This would have advantageous effects. He could not hold out any hopes of further action on those lines. In regard to the sale of meat, no meat liable prejudicially to affect human health was allowed to be sold.

The resolution was agreed to and reported to the House.

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"Further particulars about the discovery of a germ which, it is believed, is a causative factor in the production of cancer are," says the Medical Correspondent of *The Times*, "now available. The work has been undertaken, as was announced a year ago in *The Times*, by Dr. W. E. Gye, with the vitally important collaboration of Mr. J. E. Barnard, F.R.S. The support of the Medical Research Council has been behind all the studies, and Dr. J. A. Murray, of the Imperial Cancer Fund, has given valuable help.

"The *Lancet* has issued a statement to the effect that the new germ is a 'filter-passing' organism—that is to say, it can pass through the 'pores' of a bacterial filter. It is, thus, of extremely minute size. Thanks, however, to the magnificent microscopic and other work of Mr. Barnard, the difficulty of size has been largely overcome.

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"This germ has been found in cancers taken from a wide variety of animals—from birds (the 'chicken sarcoma of Rous'), from rodents, and other mammals, and from human cancers. Nevertheless, it does not, when injected into healthy animals, produce cancer. That production occurs only when the germ has been injected together with extracts of tumours (previously freed entirely from the germ).

It is clear, therefore, that two factors are in play: the germ and some substance in the tumour extract which enables the germ to exercise its baleful influence. Dr. Gye has named this substance the "specific factor," because, while the germ taken from the cancer of one species of animal can be used to produce cancer in another species, the tumour extract of one species will not give results in a different species. Thus, in order to produce cancer in a mouse it is necessary to use the "specific factor" (*i.e.*, tumour extract) from a mouse. That taken from a chicken is quite ineffective. Further, it seems probable that each form of cancer demands, for its production, its own "specific factor." So far only the type of cancer called sarcoma has been grown, and then only as a result of using extract of sarcomatous tumours with the germ. Extract of the other type of cancer, carcinoma, fails to serve the purpose.

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"The *Lancet* points out that, thanks to the work of Mr. Barnard, the germ has been seen and photographed. Mr. Barnard has for years given his services to the British nation, without salary of any kind. His most brilliant work, of which this is the outcome, has consisted in the use of ultra-violet and even X-rays as illuminants for microscopic work. These rays, are of course, invisible, and hence do not illumine at all, so far as the human eye is concerned. But they affect the chemicals on a photographic plate, and so the objects revealed by them can be photographed—and thus made apparent. These rays give a much greater magnification than do the rays of ordinary light, and so the smallest objects are brought within the field of observation.

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"The second annual report of the British Empire Cancer Campaign was published on Tuesday. It deals at length with the vast amount of work now being carried on, and includes in its survey, surgery, radiology, bacteriology, and biology. The work at the Middlesex Hospital on radium is very fully and carefully described and the progress which has been made set forth. At the Cancer Hospital an immense amount of labour has been devoted to the study of tars and paraffins capable of producing cancer, and some most important new observations are discussed."

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The 36th Congress and Health Exhibition of the Royal Sanitary Institute will be held at Edinburgh, from July 20th to 25th, under the Presidency of the Right Hon. Sir John Gilmour, Bart, D.S.O., M.P., Secretary for Scotland.

Over 800 delegates have been appointed and many representatives of Public Health bodies are expected. The following Government Departments have appointed delegates to the Congress:—Ministry of Health; Admiralty; War Office; Board of Control, England; Scottish Board of Health; Scottish Education Department.

The following Foreign and Dominion Governments and Municipalities are also sending representatives:—China; Egypt; France; Japan; Poland; Sudan; United States of America; Massachusetts; New Mexico; Nova Scotia; New Zealand; Ontario; South Australia; Victoria; Adelaide; Bombay; Calcutta; Capetown; Hobart; Kimberley; Karachi; Madras; Oudtshoorn; Port of Spain; Perth; Pietermaritzburg; Singapore; Sydney.

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In the list of new Justices of the Peace for the County of Kincardine there appears the name of Herbert W. Robson, M.R.C.V.S., of Laurencekirk, who is at present Provost of the Borough.

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## Personal.

Bosworth—Benson. On July 15th, at St. Mary Abbots, Kensington, Thomas John Bosworth, B.Sc., M.R.C.V.S., D.V.S.M., eldest son of the late Mr. and

Mrs. J. E. Bosworth, of Lidlington, Beds., to Florence Grace Benson, only daughter of the late Mr. A. E. Benson and of Mrs. F. E. Benson, Norfolk House, Camden Road, N.7.

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A marriage has been arranged and will shortly take place between Mr. W. Shipley, M.R.C.V.S., only son of the late Mr. William Shipley, F.R.C.V.S. (deceased), of Great Yarmouth, and Miss L. B. Vise, of the "Uplands," Caister-on-Sea, only child of Dr. and Mrs. A. B. Vise, of Holbeach, Lincolnshire.

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Mr. L. E. W. Bevan, M.R.C.V.S., has been doing good work in Southern Rhodesia, and in reports* to the Secretary to the Minister of Agriculture and Lands, Salisbury, he gives an account of his findings. He has devised a special vaccine for use against infectious abortion of cattle which he names "devitalised vaccine." His aim has been to retain in the vaccine only those elements required to call out in the treated animal the maximum quantity of specific antibodies. The particular virtue claimed for the vaccine is that it can be applied without risk during pregnancy, so that the resistance to infection is maintained until the danger of infection has gone by. Reports received from cattle owners who have used the vaccine are encouraging, and from hundreds of careful experiments and observations at the laboratory the efficacy of the vaccine has been verified. Mr. Bevan thinks that the best plan of campaign in dealing with an outbreak of infectious abortion is to seek out and eliminate the source of infection, to disinfect cowsheds, kraals, and infected watering places, to get rid of non-breeding cows and those constantly returning to the bull, to test all bulls and remove reactors, and to vaccinate all cows in danger of becoming infected. He regards it as essential to continue this policy over a series of years. Infectious abortion of cattle merits drastic treatment, both on its own account and because of its apparent infectivity to man. Out of thirty cases of Malta fever admitted to Rhodesian hospitals at least one-half came from areas where goat's milk had not been consumed but where infectious abortion existed at the time among the cattle. Mr. Bevan holds that the Rhodesian strain of *B. abortus* may be closely related to *M. melitensis*. In dealing with trypanosomiasis in cattle he has experimented with a preparation containing antimony and arsenic injected subcutaneously, a procedure which has in many cases enabled the owners of fly-struck cattle to carry on farming operations which they feared would have to be abandoned. Successful inoculation has also been practised against red-water and gall-sickness which are responsible for enormous losses among cattle. Protection of imported stock from infection by ticks until the immunity resulting from inoculation has time to develop is an important measure. Mr. Bevan has had the opportunity of dealing with disease on a far larger scale than veterinarians have in these isles, and has made good use of his opportunities. —*The Lancet.*

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Edward Ockenden, assistant to the superintendent at the Zoo, died suddenly on July 7th, at the age of 73, after fifty years' continuous service in the Gardens. His duties brought him little in contact with the general body of Fellows and visitors, but he was well known and highly esteemed by many who had done scientific work in the Prosectorium. When the late A. H. Garrod became prosector in 1872 he soon found it necessary to have a skilled attendant, and early in 1873 brought Ockenden from Charing Cross Hospital, where he was *post-mortem* room porter. Garrod found him skilful and competent and quickly taught him the special methods of injection and preservation required for animals, which with occasional exceptions are smaller than human bodies. But he was distressed by his bad handwriting and bad pronunciation of Latin names. Garrod accordingly made Ockenden write in a copybook daily until he had acquired the clear round-hand which has been of much service in keeping the records of the Society. He also made him stand on a bench and read aloud the "Vertebrate List" for an hour daily until Latin names ceased to be a stumbling block.

In addition to assisting Garrod, Forbes, and other prosectors of the Society, Ockenden did much for the late Sir Victor Horsley and Sir Frederick Treves, and for Sir John Bland Sutton, the present President of the Royal College of Surgeons, and many less well-known anatomists. A number of zoological explorers are also indebted to him for their first knowledge of skinning birds and mammals, and preparing collections for transport home.

In 1907 after over thirty-four years' service, the heavy work of the Prosectorium began to tell on Ockenden's health. He was given a house in the Gardens and made first head keeper, with general superintendence over the keepers, and afterwards assistant to the superintendent. He carried out his duties actively until a few days before his unexpected death from an internal complaint beyond operative treatment.

*Southern Rhodesia: Report of the Director of Veterinary Research, 1924. Inoculation of Cattle against Red-water and Gall Sickness, Bulletin No. 536.

## CORRESPONDENCE.

**Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.**

**All correspondence must bear the name and address of the contributor for publication.**

**The Editor does not hold himself responsible for the opinions of his correspondents.**

### Suitability of Horse Types.

To the Editor of The Veterinary Record.

Sir,—The letter from Captain Conner bewailing the shortage of the types of horses urgently required at present is opportune, but is it correct? The fashionable heavy draught horse of to-day, that is, the big, heavy boned, clean legged gelding, which must stand close on 17 hands is rather scarce and dear, but is it not possible to get the work done quite as smartly and efficiently with other types of horses? It is possible to find a 16.1 horse with more power and substance, a sharper worker and a better wearer, than many of the 16.3 and 17 hands horses that town firms are demanding to-day, and for which they are paying long prices. If the weighing machine was used more often when purchasing horses, it would be found most useful in deciding the suitability of an animal for its work. I have yet to meet the man who a is a good judge of the live weight of a horse.

What is the reason for the present day aversion to mares for work? One can see mares sold to-day for £40 to £45, yet had they been geldings they would make £70. Temperament is an excuse given, but I think I have seen as many bad workers amongst geldings as amongst mares. In the old driving days I preferred a mare; she appears to have more pluck. One generally found at night that the mare was "there" when the gelding was "done." Capt. Conner accuses the breeder for not producing the proper type of animal, but he must remember that he is asking for a "cross-bred" or "mongrel" animal, and anyone who goes out to breed such is gambling. The lighter breeds for which he asks are also mongrels for army purposes, and anyone attempting to breed them finds he has many misfits.

Capt. Conner appears to lean towards the Clydesdale and I do not intend to "boom" the shire, but I have watched the Cawdor Cup awarded to an animal that could not rightly be described as a heavy draught horse. Again, in the same ring, in a class for heavy draught geldings, I have seen two Clydesdale judges give the awards to horses with a fair amount of wiry hair on their legs.

If such buyers as the Glasgow Corporation had a better way of making their requirements known to the breeders or owners, and bought direct, cutting out so many middlemen, they could still find their class of horse and at less money. A few weeks ago a client of mine boxed a horse to a buyer in Glasgow, just over 200 miles. Less than

three months previously this horse was sent by a dealer in Scotland to a dealer here. He sold him to a farmer, who worked him over two months and then sold him at £15 profit back to the man from whom he bought. This man, in turn, consigned him to Glasgow. Altogether this horse within three months travelled upwards of 350 miles by rail, passed through four dealers' hands and one farmer's and finished up nearly where he was bred. He was a good gelding but one must infer that either the breeder was badly paid for him or else the final owner bought a very dear horse. There is not much incentive to the farmer to breed the lighter class of horse—there being at least two more years keep on him. The heavy horse at three years old is at least earning his keep on the farm; to make the lighter horse do so is courting disaster.

When the farmer does get the correct article, he has to depend on the dealer as a purchaser: too often the remount and the private buyer will not look at them until they are in the dealer's hands. Some purchasers will tell you that they can buy better and cheaper from the dealer, but in many cases they are counting on the dealer trying to retain his reputation and his trade.—Yours faithfully, WM. A. CAMPBELL.

Boroughbridge, Yorks.

## Re Milk Fever.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—I should very much like to obtain the opinion of country practitioners as to the order in which the following breeds of cows should be placed with regard to susceptibility to milk fever: Jerseys, Guernseys, Jersey-crossbred-Shorthorns, Dairy Shorthorns, Red Polls, Friesians.

Also whether, in their opinion, fat cows are certainly more susceptible to milk fever than thin cows.—Yours faithfully, L. P. PUGH,

Pennard House, Sevenoaks.

Dear Sir,—Regarding the theory put forward by Professor H. Dryerre and Prof. J. R. Greig, in the *Veterinary Record* of March 21st, 1925, can we be informed as to the blood pressure in a typical case of "post partum paresis," before and after intra-mammary insufflation?" I have no record of blood pressure being taken: it would be interesting to know the average rise or fall in blood pressure over a number of cases.—Yours faithfully, P. M. EDGAR, M.R.C.V.S.,

Battle, Sussex,

*July 12th*, 1925.

Sir,—The remarks on milk fever from *The Lancet* in your last issue were interesting. Perhaps when the various research associations now springing up get into full swing we shall know something reliable about the cause of the disease. At present various theories besides the one given in your last issue are held by clinicians.

The following are some of them:—

1. Acute anæmia and sudden disturbance of the nourishment of the brain.
2. Penetration of air into the veins through aspiration in the uterine vessels.
3. Increased milk secretion and increase of lymph in the udder; greater conveyance of lymph to the pectoral duct and consequent damming in the other conducting vessels—as a result, pressure on the nerves and inhibition of their function (vagus, sympatheticus).
4. Infection.
5. Auto-intoxication.
6. Lack of oxygen in the whole body and accumulation of carbonic acid (puerperal asphyxia).
7. Vaso-motor collapse as a result of quali—and quantitive changes of the secretion of the udder or other hormone-forming organ.
8. Anaphylaxia, as a result of repeated absorption of albumen from the colostrum.

A recital of some of the theories may be useful at the present time.—Yours truly, G. MAYALL, M.R.C.V.S.,

Bolton.

## Humane Slaughter and the Exportation of Horses.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—Those who are interested in the much discussed question of humane slaughter as applied to animals, should see the new abattoir which has recently been erected at Amsterdam. For the veterinarian (and it is we of the Veterinary Profession who ought to take the lead in these matters, especially in England, where we boast of our humanity towards animals) the abattoir buildings, together with the methods of slaughter, are the last words on this question; and definitely give the practical answer as to whether, for example, the flesh of the pig becomes splashed if the animal is rendered unconscious before the knife is used. By Dutch law all animals (horses, cattle, pigs, calves, and even sheep) must be stunned before the knife is used, and the fact that thousands of pigs are killed each week, and that no complaint is ever made of discoloration of the flesh, shows that humane killing *can* be done—and what is done in Holland can be done in England too. It is greatly to the credit of the Dutch practical humanitarians (and veterinary advice has played a large part in this) that they have given us a lead.

One or other pattern of the humane killer is used every time for the horse, cow, and large calves; the captive bolt pistol for the smaller calves and sheep, and the pin and mallet for the pig. In fact, the system (which is compulsory by law and has only been carried through after similar great opposition to that which is now made here) is, (with the exception of the Jewish method which is still permitted) as humanely perfect as it is possible to be.

The Chief of the abattoir, Dr. Reeser, is a veterinarian, and he has a competent staff of veterinary and lay inspectors. The central hall system enables a perfect system of inspection, and the horse abattoir is as well equipped and clean as that for other animals.

I would wish all my British colleagues to see what I have seen this last week-end, and for any who choose to take advantage of it (students as well as graduates will be welcomed) I am willing to arrange for a personally conducted party to visit the abattoirs at any mutually convenient week-end in August or September. It will also give an opportunity for those who are interested in the subject of the Exportation of Horses, and what was formerly called "The Decrepit Horse Traffic," to see some of these animals, and to travel across on the same ship with horses destined for the abattoir.

Their unloading and veterinary inspection can be seen at the landing stage, and they can be followed up to the quarantine stables (which fulfil all the requirements of modern hygiene) where plenty of excellent food and bedding await them right up to the morning of slaughter; and the end when it comes is unseen, unanticipated, and humane.

Departure for Rotterdam is from Victoria at 5-45 p.m., via Gravesend and the Batavier Line. Saturday morning can be spent in a visit to the Utrecht Veterinary School, where again the Dutch have given us a lead, as the new Anatomy Theatre and the Canine Department new buildings are superbly fitted up with every modern convenience, having recently cost about £25,000 each.

On Sunday morning the party can see the landing of another consignment of horses and afterwards visit the Serum Institute, and in the afternoon a visit can be paid to one of the most noted Friesian dairy herds in the country. The evening may be spent at Amsterdam where, on the following morning, the landing of the imported horses from the Leith boat will be seen; the rest of the morning being spent at the abattoir by the courtesy of the director, Dr. Reeser.

On the Monday afternoon the party will proceed back to Rotterdam in time to catch the English boat, which reaches London about 10-30 a.m. on Tuesday morning. Three days' educational sight seeing, and the cost of the whole trip (including first-class hotel accommodation) will not exceed eleven guineas.

Passports are not necessary, and I shall be pleased to supply any further details upon request.—Yours faithfully, FREDERICK HOBDAY.

165 Church Street,
Kensington, London, W.,
*July 13th*, 1925.

### Retention of Fœtal Membranes in the Mare.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—The paper by Mr. W. A. Dickinson in your issue of July 11th, and especially that portion of it dealing with retained placenta in the cow, is as fine and frank an exposition as I have yet seen of a very harassing subject. Mr. H. C. Reeks, senr., commenting on the paper, referred chiefly to retention in the mare, and described his method of removing the afterbirth, in that animal by ignoring the light-coloured fibrous portion and applying traction exclusively to the villous chorion. That is the method I have always followed, and I have found it to be very simple and successful. My procedure differs from that of Mr. Reeks in that in those cases (the majority) where none of the villous portion is exposed, I insert my hand and search for it. It is easily recognised by its velvety texture, and the hand soon encounters that part of it that has been torn by the emerging fœtus. A little gentle pulling soon brings it into view, and the job is then completed from the outside.

I have been told by three different laymen, all experienced horse breeders, of a way in which they themselves cleanse mares *immediately after foaling*. As soon as the mare gets to her feet they grip the hanging membranes and strain them a little, not pulling, but just holding them a little more than taut. After about ten minutes of that the entire afterbirth—so I am told—comes tumbling out. I have not tried the method myself, but I think it is worth considering. One mare I know, which I cleansed after each of her three previous foalings, was this year cleansed by a layman successfully in the manner I have just described. Many of the mares so treated would, of course, have cleansed naturally in any case, but others, I am sure—including probably the one to which I have referred—would not. Why this straining on the exposed membranes should cause release and expulsion of the remainder so quickly is rather obscure, unless it be that slight stretching of the umbilical vessels allows the still uncoagulated blood to flow into them from the capillaries of the villi, thus lessening the tension of the placental villi within the spaces of the uterine mucosa. Probably also, contractions of the womb would be induced, which would further help to disengage the placenta. I wonder if any of your readers has experience of this method.—I am, yours faithfully, DONALD CAMPBELL,

35 Calderwood Road,
Rutherglen,
„ *13th July*, 1925.

*The Editor acknowledges the receipt of the following* :—

Communications from Messrs. R. L. Cornell, A. Levie, J. D. Pottie, and F. Ware.

Lt.-Col. J. W. Brittlebank ; Capt. H. Kirk.

Report of the Summer Meeting of the Central Division, from Mr. J. F. Macdonald, Hon. Secretary.

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*Ref'ces.: Prof. Lander in "Veterinary Toxicology," Prof. Froliner, Neumann's "Parasites of Animals," Prof. Cave in the "Agricultural Gazette," 7th November, 1924, also the Veterinary Adviser to the "Farm and Stockbreeder," in the issue of October 27th, 1924. Professors Monnsu, Raillet, Henry and Froehner.

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